# PACIFIC NORTHWEST REGIONAL POWER ISSUES

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# HEARING

BEFORE THE

SUBCOMMITTEE ON REGULATION, BUSINESS
OPPORTUNITIES, AND ENERGY

OF THE

COMMITTEE ON SMALL BUSINESS
HOUSE OF REPRESENTATIVES

ONE HUNDRED FIRST CONGRESS

SECOND SESSION

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# PACIFIC NORTHWEST REGIONAL POWER ISSUES

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## SATURDAY, SEPTEMBER 15, 1990

House of Representatives,
Subcommittee on Regulation, Business
Opportunities, and Energy,
Committee on Small Business,
*Portland, OR.*

The subcommittee met, pursuant to notice, at 9:30 a.m., in the Portland City Council Chambers, Hon. Ron Wyden (chairman of the subcommittee) presiding.

Chairman Wyden. The Subcommittee on Regulation, Business Opportunities, and Energy will come to order. I think it is very appropriate that we are having this hearing today. Just yesterday, the Department of Labor put out statistics that I think offer, perhaps, the first and most solid evidence of what an oil crunch can do to this country.

What we saw happen in the Persian Gulf in the month of August is reported by the Department of Labor and has sent inflation upward and pushed our retail sales into a significant climb downward. That is all reported just this morning, which I think reflects the latest assessment of what the oil crunch has done to our economy.

My own view is that the Federal Government has to be a better partner in the effort to address the Northwest's energy needs. Ever since the middle 1980's it seems that in Washington, DC, energy policy has not consisted of a whole lot more than letting oil companies charge whatever they want.

From the standpoint of conservation, from the standpoint of our research and development budget, the Reagan administration, in my view, took this country backward. I listened very carefully on the floor of the House to the President's speech this past Tuesday, and I think he still gave conservation the back of the hand.

In fact, the Deputy Secretary of Energy, Henson Moore, told the Congress later this week that he was not even sure what the President was referring to in his speech on Tuesday night with respect to conservation. I think the Federal Government has to be a better partner.

Perhaps the most diplomatic statement you can make about the Federal energy policy today is that it is fragmented. It is literally strewn all over Washington, DC, within the Environmental Protection Agency, with the Department of Energy, and the Department of Interior. Even the Department of Treasury is in the business of making energy policy. All of these good people go on to make their decisions, and sometimes they mesh, and very often they do not.

So, we want to look today in particular at how the Federal Government can help meet the energy needs of the region. I think there are a number of concepts that make sense for us to build on, certainly, looking to the Power Act, and particularly its priority for conservation. Conservation being regarded as a resource ought to be at the top of the national policy.

Second, I am very interested in exploring the possibility of basing utility rates of return, not on the volume of power sold, but on the volume of power conserved. Most rate agreements are based on the principles of the more energy sold, the greater the earnings. If earnings were tied to the amount of energy conserved, rather than the total amount of energy served, there would be new marketplace incentives for utilities to increase their investments in conversation.

I am particularly interested in asking our witnesses about the possibility of Oregon looking at volatiles, such as New York has been considering. I understand a number of our witnesses are going to be talking about that as well.

I think it also makes sense to compute costs of a resource that now are mostly ignored, such as environmental degradation costs, into the total costs of the resource. One of the reasons many renewable energy sources such as solar power and wind power have been so slow to develop is that up front their costs are much higher than those associated with traditional energy costs.

But, if the cost of permanent nuclear waste storage was more accurately reflected in nuclear power, and if the environmental degradation caused by high sulfur coal from the Midwest was more accurately reflected in the costs of coal generated power, then renewable energy costs would be certainly much more in the ball park.

Other important incentives we should be looking at are higher efficiency standards for household appliances, furnaces, water heaters, and lighting. We need to reward those who utilize high efficiency items and ensure again that there are marketplace incentives. This is an important area that touches on the lives of all Americans on a daily basis.

I think it is important to encourage the development of alternative fuels such as methanol, ethanol, and natural gas and to encourage the conversion of cars that can utilize these fuels. Right now, I am spending a significant chunk of my waking hours serving as a member of the Conference Committee on the Clean Air Act in Washington, DC. We will have an opportunity to do just that—to look at how to expand the role of the alternative fuels such as methanol and ethanol, and I think that is an important area.

I think it is appropriate that we have this hearing today. I think a lot of Oregonians, when they saw events unfold in the first week of August, said here we go again. We have faced the problem of an oil crunch in the early 1970's in 1973. We faced it again in 1979, and so, we say to ourselves, here we go again in 1990 with many of the same forces at work, such as a dependence for 50 percent of our energy on foreign oil.

There is much to be done.

[Chairman Wyden's opening statement may be found in the appendix.]

Chairman WYDEN. We have an excellent panel of witnesses. Mike Grainey is here from the Oregon Department of Energy, as our friend Dave Yaden is somehow ricocheting up above the friendly skies waiting to get home and facing much of the same problem that I faced getting home yesterday as well. We welcome Mike Grainey and invite him to come up to our panel.

Angus Duncan, the Oregon member of the Northwest Power Planning Council, is here as well. I think he is doing an excellent job, particularly in the focus on conservation and renewables. We appreciate your coming, Angus.

Sue F. Hickey, the Assistant Administrator of Bonneville Power Administration, is here as well to represent the agency.

I have read your prepared remarks and think you raise a number of good and provocative ideas.

So that you are aware of what will be done with your testimony, I must tell you that I have two energy assignments. One is as chairman of the Small Business Subcommittee that focuses on energy, but my principal committee assignment is as a member of the House Energy and Commerce Committee.

Chairman John Dingell asked that I relate that he was pleased that we were having this hearing. He is interested in Northwest input because he is looking at the next steps that our committee could pursue in developing a national energy policy.

Now, it is the practice of our committee to swear all the witnesses that come before us. Do any of you have any objection to being sworn?

Mr. GRAINEY. No.

Mr. DUNCAN. No.

Ms. HICKEY. No.

[Witnesses sworn.]

Chairman WYDEN. Again, we thank you all. I am going to make your prepared remarks a part of the hearing record in their entirety.

Why do each of you not try to take between 5 to 10 minutes for an opening statement, so that we will have plenty of time for questions.

Mr. Grainey, we will begin with you.

## TESTIMONY OF MICHAEL GRAINEY, OREGON DEPARTMENT OF ENERGY

Mr. GRAINEY. Thank you, Congressman Wyden. I am very pleased to be here today, and I wanted to take the opportunity, too, to acknowledge your leadership on the energy issues, and particularly thank you for the recent help you gave us on H.R. 711. That is a very important piece of energy legislation that I will talk about in my statement.

I would also like to introduce Sam Sadler of my staff who is right there. He helped me prepare this statement.

I think it is very important that we focus on this Nation's energy agenda; where we are, how we got here, and where we need to go. Some of what I have to say today will win me no points in a popularity contest. There are some hard truths about energy that most

Americans have never faced, and they must. The only question is when.

Shall we face and address these tough questions now, or shall we put them off on our children and our grandchildren? Quite simply, this Nation has not learned how to sate its appetite for oil. Until we are willing to spend a little more up front to build in long-term efficiency in our homes, our factories, our equipment, and our cars, we will continue to forfeit ready opportunities to stop energy waste.

The lesson we should learn from the Iraq invasion is this: We are no less vulnerable to rapid oil price hikes and supply cutoffs than we were 10 years ago. For a State that spends half of its energy bill on imported oil, some $2 billion, that is a very hard lesson.

Energy efficiency, that is, saved energy, must be the foundation of our strategy to meet these energy management challenges of the 1990's. We win twice by saving energy. First, saved energy is the cleanest, cheapest, and safest way to meet future demand and keep Oregon's high quality of life. Second, energy efficiency helps boost our economy by lowering energy bills and keeping energy dollars from flowing outside our borders.

Having said that, the single most important thing that the Federal Government, working with the States, can do is something that is not going to be very popular—to get prices and incentives right, particularly for oil, both to account for environmental costs and to cushion future price shocks.

Very simply, the prices we pay for energy do not reflect the costs imposed on the environment and public health and safety, nor does the market price of oil reflect cost to the economy in terms of national security, such as troops in Saudi Arabia.

The price of all energy is too low, and, as a result, we use too much energy, and we waste too much energy. Frankly, Americans do not want to hear that.

We abhor short-term pain, long-term gain policy strategies. Part of the American lifestyle has been to mortgage the future to finance the present, but, sometime, somehow, some way, we must choose the option of paying now rather than paying later.

At the Federal level I think that means we should do three things. One, we should have a serious debate about a Federal carbon tax for all fossil fuels in proportion to each fuel's contribution to $CO_2$.

Two, increase taxes on transportation fuels. State and Federal gasoline and diesel taxes, which, for the most part, raise money for road construction and repair, are insufficient to pay for all highway costs, much less to signal consumers the true cost of the resources. With the revenues from those increased taxes we should use those funds for such things as low-income weatherization, other energy conservation investments, mass transit funding, alternative fuels, and similar measures.

Third, we should build more efficient new homes, buildings, appliances, vehicles, and factory stock. It is on this latter point, in particular, that the States have very limited authority and cannot really affect the necessary changes.

Congress must step up to the challenge, specifically by doing five things. First, toughen the automobile CAFE standards and the Federal gas guzzler tax. As part of that, we think you should also establish a gas sipper rebate, an incentive for fuel-efficient cars.

Second, toughen building standards for manufactured homes. Manufactured homes are a large part of Oregon's new homes. Those units are build to HUD standards, which use twice as much electricity as a unit built to the Northwest Power Planning Council's model conservation standards. HUD is doing a review of its manufactured homes. That review is dragging. Frankly, HUD is ignoring the law and ignoring congressional inquiries to adopt effective codes.

Third, toughen appliance efficiency standards. The U.S. Department of Energy made a good start on its refrigerators and freezers. It needs to do so with the other appliances that are on schedule for its review and adoption.

Fourth, require that all new and renovated Federal buildings include all cost-effective energy measures. Government must be a model of energy efficiency, and there is much cost-effective conservation beyond that specified in building codes in the commercial section. In Oregon now, we have a law that requires new State buildings to incorporate all cost-effective savings and also buildings that undergo major renovations.

Five, reinstating Federal funding to obtain greater levels of energy efficiency is a must if we are to penetrate the areas of need effectively. That is where H.R. 711, that you helped us on, is so important.

There are three principal areas where we see the need for increased Federal funding. One is to increase funding to weatherize the homes of low-income families; two, to continue the various State and local assistance programs for energy conservation; and three, to redirect U.S. Department of Energy research and development moneys.

The current U.S. DOE budget always has been, and continues to be, nuclear top heavy, as your opening statement pointed out. Most of that is in nuclear weapons production and research closely related to defense needs. We must move more money into conservation and renewable resource research and away from that nuclear defense effort. What U.S. DOE money goes into nuclear weapons should be for nuclear weapons waste clean-up. Hanford is simply an environmental atrocity, and it is time for the Federal Government to obey environmental laws like everyone else.

In closing, Congressman, it seems to me that circumstances have somehow been arranged for us to have one more chance to get smart about the way we use energy. Whether we take advantage of that opportunity remains to be seen.

Thank you.

[Mr. Yaden's statement, presented by Mr. Grainey, may be found in the appendix.]

Chairman **Wyden**. Mike, thank you for an excellent statement. I just can't resist mentioning, though, that this week, on the Department of Defense bill, I am going to be offering an amendment to strengthen the safety measures for dealing with the tanks up at Hanford.

Mr. **Grainey**. We are very pleased with that amendment.

Chairman **Wyden**. You all have been very helpful in working with us on it. It was a good statement, and I will have questions in a few minutes.

Mr. Duncan.

## TESTIMONY OF ANGUS DUNCAN, OREGON MEMBER, NORTHWEST POWER PLANNING COUNCIL

Mr. **Duncan**. Congressman Wyden, thank you for providing the platform, and megaphone, and for the preface, which I think sets the tone, certainly, for the remarks that I have to offer.

Summer and fall is the time for sequels in all the movies, and we are reprising the energy crises of the 1970's again, as well. We have war in the Middle East, interrupted oil supplies, and $30 a barrel oil. We are now importing 50 percent of the oil we consume, and half of that is coming from the Persian Gulf. It would be hard to distinguish 1990 from, say, 1979.

In the Pacific Northwest, our power surplus is gone. We are dusting off gasoline contingency plans. I think a lot, in fact, has changed since the 1970's. Most of the changes, however, come in the good news/bad news variety.

The good news is that 1990 auto models go twice as far on a gallon of gas as did models in 1973, and the bad news is that we are actually going farther in them. We are driving about 50 percent more miles per person in 1990 than we did in 1970 and using the gas to do it. We are doing it in new cars that are 7 percent heavier, 10 percent more powerful, and half-a-mile-per-gallon less efficient than 1988's new cars.

These are the "vehicles that most consumers want." I could not resist clipping the half page advertisement out of the New York Times which the auto manufacturers stuck in there several days ago. The issue is not what are the vehicles we ought to be driving, but what do consumers want. It is, in fact, true that those are the models that consumers want because just 2 months ago, before the Iraqi invasion, gasoline cost about the same per gallon as it cost in 1970, 20 years ago.

More important, because of the higher efficiency of today's auto fleet, the consumer cost per mile traveled is 50 percent lower than it was in 1970, so, of course, people are buying less-efficient cars, and they are driving them farther. Every price signal that they get tells them that is the rational thing to do.

There is other news, good and bad. We use a third less energy overall per unit of GMP today than we did in 1970, but most of these gains came from the decisions and the programs of the late 1970's. We have not put much in the pipelines since then, and by the mid 1980's the pipeline ran dry. Energy intensity has increased in the last 5 years.

Good news—the energy use per household fell by a third in the last two decades, and for new houses built in the early 1980's usage was cut in half. But, since 1985, new homes have become 17 percent larger, they have more energy using appliances, and energy use per household has been on the increase.

Good news—the best hot water heaters and refrigerators available today use a third or less of the energy the same appliances used in 1970, but we do not buy them. We would rather pay $700 for a refrigerator that costs us $75 a year to operate than pay $100 more for one that uses less energy and costs us $25 a year to operate.

I could go on, but there are some patterns in the handwriting, and I would like to suggest one or two of them.

One, the pipeline of national efficiency gains dried up in the mid 1980's because we stopped putting anything into it, whether it is dollars, or commitment, or R&D, or even rhetoric—anything—at about 1980.

Two, people will respond to consistent, clear, and present market signals. They will make generally rational choices, but they do not respond well when price signals are confusing, when the signals are mixed with political rhetoric that is contradictory, or when rewards for energy efficiency choices are uncertain or remote.

Three, consumers, in the end, do not care much about gallons of oil or kilowatt hours of energy. They care about mobility, comfort, convenience, and prestige. They care about warm houses, and light, and television pictures, and getting to their jobs, and to shopping, and visiting family, and taking vacations. If these goods can be had for fewer gallons and fewer kilowatt hours, consumers are not going to object.

Four, and this I regard as extremely important because it is hard to get your hands around, but the infrastructure—its transportation system, its utility system, its regulatory system, its industrial plans, its building codes, its land use patterns—are all designed and built on cheap energy. The lead times to change this infrastructure are very long.

We discovered, when I was at DOT, auto industry design cycles are 5 years long. It takes a long time to bring a new model into the market. Office buildings may get remodeled every 20 years. A house built with two by fours will never take more than 3½ inches of insulation. A transit system may take two decades to construct, and home-to-work land use patterns evolve over generations. If we want to alter any of these long-term choices, it has to be with consistent, long-term signals.

Five, supply side solutions always seem easier in the short term. There are fewer decisionmakers. Delivery is measurable and certain. The American tradition is to make more or to take more when what we are using runs out. If you have enough you can do that for awhile, but you exhaust this field, you move onto the next one, you use up this water supply, and you steal water from the next valley over or, as we have discovered from recent statements out of Los Angeles, from the next State over.

In contrast, energy conservation requires choices by all consumers through complex market mechanisms. Gains are hard to capture. They are hard to measure, but they are real, and they are permanent.

Six, we are finally starting to calculate the true costs—not just the market price—of more oil and new power plants in burning fossil fuels. These are environmental costs. Now they are political costs of fewer international options. They are military costs, and budget costs, and ultimately economic stability costs, but most of these costs are not reflected in market prices for energy.

So, what good are these lessons to you, your colleagues, and to us in the Pacific Northwest? First, they tell us that we were on the right track in writing the Northwest Power Act of 1980 and setting up the council on which I serve.

That council, in collaboration with Bonneville, and the utilities, and the others in the region, set up an approach to acquiring resources that emphasized a least-cost mix of conservation and new supplies in that order of priority. We treat conservation the way we treat a generating plant, even if it's output is harder to measure. We plan on the unexpected by risk-management policies that begin with short-lead time, small-increment resources, a diversity of technologies, and the lightest possible environmental footprint.

We are trying to measure the true cost of each energy choice, including environmental costs now, so that we do not commit penny-wise, pound-foolish mistakes.

The Federal Government, which has for 10 years been more the problem than part of the solution, could begin with a national energy policy that has these same attributes. It could set realistic, minimum codes and standards for energy efficiency in vehicles, appliances, and manufactured housing, and elsewhere.

Even more important, it could establish consistent, coherent national policies on pricing and market signals that reward efficiency, penalize inefficiency, and stimulate demand for and supply of more efficient equipment, appliances, and vehicles. That might mean an engine size or a mile-per-gallon tax which preserves personal mobility but discourages the larger, heavier, more powerful cars that are not necessary.

Such a tax is not a substitute for higher new car fuel economy standards, but it is an essential companion piece. It is not a substitute for market forces, but it is a bending of these forces to the public interest.

Fuel prices should also better reflect true long-term replacement costs and environmental risks through higher fuel taxes.

Point-of-sale efficiency charges and rebates should encourage consumers to go beyond minimum efficiency standards set by code.

The principles, if you want to whittle them down to three or four, of such a national policy would be that standards, taxes, and rebates are keyed to efficiency rather than denial of mobility, or heat, or life, or another essential good.

Consumers who select the most efficient goods that are commercially available pay the least, and for those consumers, rebates offset the higher capital cost of the more efficient goods, and those rebates are based on cost-effective acquisition of energy. The higher prices do not have to be far higher if they are far more visible. Point-of-sale charges and rebates are most effective.

These changes in market signals need to be phased in over time, but consistently and predictably, to allow both consumers and suppliers the time and the motivation to adapt.

There is more that ought to be on the Federal Government's plate. We have not spoken of R&D. We have not spoken of some of the new technologies. I have not addressed issues of regulatory barriers and regulatory structures that are based in earlier times of abundant energy. I have spent very little time here on supply issues because they usually get all the attention.

First things first, as far as we are concerned, and making the best use of what you have comes first.

The framers of the Northwest Power Act were wise a decade ago, just as most of the rest of Government was entering an era of foolish neglect of these issues. They said start by conservation based by real commitments of resources, skills, and political will, and that is the message I think you ought to take back to Congress.

Thank you.

Chairman WYDEN. Angus, thank you very much. It is very helpful, and I will have some questions later.

Ms. Hickey.

## TESTIMONY OF SUE F. HICKEY, ASSISTANT ADMINISTRATOR, BONNEVILLE POWER ADMINISTRATION, U.S. DEPARTMENT OF ENERGY

Ms. HICKEY. Good morning, my name is Sue Hickey. I am the Assistant Administrator for Energy Resources at the Bonneville Power Administration.

What I would like to do this morning is address some key points in my testimony that deal with the way Bonneville is seeking to meet future energy needs in the Northwest, and especially how we are focusing on conservation.

The first point, really to reiterate something that you said in your remarks and which Angus has just mentioned, the Northwest has been significantly advantaged by the Pacific NW Electric Power Planning and Conservation Act that was passed in 1980.

Three particular things come to mind. The act created a planning framework that focuses on uncertainty. It also provided the NW Power Planning Council a forum where the region comes together to discuss issues of importance and reaches understanding of those issues. Finally, the act very clearly defined conservation as a resource. I would advocate to you that there is something extremely unique about the way the Northwest approaches efficiency. This has been a significant advantage.

The council is now preparing its third regional power plan. Bonneville responds to that power plan with a resource program. The resource program is prepared every other year and identifies actions that we will implement to meet the Northwest's electric energy needs. I will talk more about that later.

The second major point I wanted to make very clearly is that Bonneville is in load/resource balance. We had a fairly significant surplus several years ago, and have had the good fortune of a healthy economy. Our electrical demands have grown. We are now in a situation where the electrical demands just about match the resources we have to meet them. As we speak, we are in the process of beginning to make a turn into aggressive actions to purchase resources for the future.

The third key point I want to make is that we have some good choices before us. Very briefly, we think there are around 750 megawatts, and I say around 750 because it will vary depending on the demands that we see, of conservation that are available to us over the next 20 years.

In addition, there are about 600 megawatts of resources including small hydroefficiencies on the existing hydrosystem and transmission-system efficiencies that augment the large base of conservation.

Our sense is that there are several thousand megawatts, essentially made up of small, dispersed resources with low environmental cost—relatively low costs overall—that can meet our needs for the remainder of the century.

The next point is that Bonneville has just prepared a near-term resource program. It is our seventh resource program since 1982. I want to emphasize for a moment that the resource program focuses on uncertainty and flexibility. We prepare five different load forecasts. We are not just looking at one forecast of demands.

The 1990 program identifies near-term actions that BPA will take, principally in 1992–93, and includes activities to 1997. The 1990 resource program specifies actions BPA may take to develop about 600 megawatts of conservation and other resources to meet medium-high demand through 1997. Specifically, those actions include development of at least 300 megawatts of conservation over the next 6 years; developing another 50 megawatts of conservation and generation resources through billing credits; development of 100 megawatts of conservation and generation resources through competitive bidding; acquiring 100 megawatts through hydrosystem efficiency improvements; and we have also planned a 30-megawatt geothermal pilot program.

I would like to emphasize that these actions essentially meet our loads for medium-high load growth, which is the next to highest load forecast that we look at. We also have prepared a contingency plan. We were concerned that because electrical demands were growing so rapidly, we did not want to undershoot by just planning for the medium-high. We tested our ability to cover high load growth and felt it was important to put together a contingency plan.

That contingency plan will focus on acquiring options on 800 megawatts of resources. Basically, the option idea is to shorten lead time on those resources so we can bring them on very quickly in the event of unexpectedly high-load growth or a reduction in the capability of existing resources.

We expect to invest over $1 billion to purchase conservation, other resources, and options on resources, between 1992 and 1997. We feel we can be successful in this task because, over the past 10 years, we have acquired about 300 megawatts of conservation. These investments in residential and commercial retrofits and industrial efficiency, plus our efforts supporting commercial and residential building codes, with the council's guidance, we feel we have established the capability to meet the changing needs of the 1990's.

In conclusion, BPA and its customers are responding to the shift from a period of surplus to an era of more aggressive resource development. We are proud of the progress we have made to date and are confident that the plans we and the council have laid for meeting future power needs are sound.

I feel confident they are sound, not because I think they are right, but because I think they are flexible and respond to the uncertainty before us.

We appreciate your interest in this significant challenge for BPA and the Northwest.

[Ms. Hickey's statement, with attachment, may be found in the appendix.]

Chairman **Wyden**. Ms. Hickey, thank you very much. All of you have given excellent statements.

Let me start with this issue of conservation. As I mentioned, listening to the President's speech and on the floor of the House, I really felt on Tuesday night the President was giving the back of the hand to conservation. The Deputy Secretary of Energy, Mr. Moore, said he was not even sure exactly what the President was talking about because the proposals they were making did not even require congressional approval. I think all of you have said first and foremost we ought to focus on conservation.

The area that I am particularly interested in, and I want to explore for the Commerce Committee and Mr. Dingell, is the question of whether, as an overarching Federal policy, a national, overarching Federal policy, we can tie power rates to conservation.

I know that the State of New York has begun an initiative in this regard. It is a very dramatic step. Of course, right now, we are in the situation where, basically, if you are a utility company, and you sell less juice, you make less money. The system is just skewed, or it is selling more.

Mr. Grainey, let me start with you and ask you whether you are looking at that kind of concept in the State of Oregon and maybe ask all three of you your thoughts on whether we can build this as an overarching principal, as part of the national energy policy, to tie the power rates to conservation? The bottom line is somebody pays. If you think it is, I would be interested in your thoughts about how we might realistically go about it.

Let us start with you, Mr. Grainey.

Mr. **Grainey**. Thank you, Congressman Wyden. I am more familiar with what California is doing than New York. They have done some very innovative, and I think pretty effective, things to provide rate incentives.

Chairman **Wyden**. Can I interrupt you just for a second? Just so we are clear on the record, Oregon does not do this today for the most part, do we?

Mr. **Grainey**. Well, our own Public Utility Commission has instituted some of these reforms and is looking very seriously at more. We are supporting their efforts and their analytical efforts to look at those.

We are also considering State legislation that would quantify the conservation compared to other resources. Currently, in Oregon law, like in the Federal Power Act, that is 10 percent. We are considering legislation to raise that to 20 percent.

As an alternative, our Public Utility Commission is looking at attempting by rule to quantify differences amongst the various types of resources that would hopefully be more precise and more accurate.

I think that analysis of rates is critical to getting long-range energy conservation in the utility sector. The utilities are entitled to a profit. They need a profit. They need a profit motive, and it should be in energy conservation.

I think, on the Federal level, there are two things. I think, to a large extent, these rate incentives have to be tailored to the individual States and individual regions, so I am not sure you can have a broad-based approach federally, other than perhaps some encouragement to the State to do that. That encouragement can take a number of forms.

The Federal Government, and the thing I am particularly critical here of is OMB. OMB needs to allow agencies like the Bonneville Power Administration which is doing some very good things in energy conservation—has done some pioneering things in all types of energy conservation—a range of incentives on the wholesale, retail, and individual levels. OMB is actively fighting that.

Sue cannot talk about this because she works for Bonneville, but I can.

Chairman WYDEN. Then we will have you talk about it. Excuse me for interrupting you, because I think you are making an important point. Please describe in some detail what OMB is doing right now. I call them the Office of Meddling and Butchery. I would like to know what they are doing to oppose Bonneville and others in some of these conservation areas.

Mr. GRAINEY. OMB has apparently taken it upon itself to take a very active policy role across Government. When it does not like an agency's policies it reacts pretty vigorously.

With respect to Bonneville, it has threatened staff cuts. I think there were some 200 that were proposed this year. There would have been substantial impacts on the conservation programs of Bonneville.

In addition, OMB threatened to administratively modify the repayment schedule, which would have enormous impacts in the Northwest. We have talked about price incentives for conservation, but, across the board, a wholesale change in the repayment schedule just because OMB is upset at Bonneville is not effective energy conservation planning. Those things have to be done very methodically and very analytically, as Angus pointed out.

From the Federal level, we need the acquiescence of the Federal Government to allow agencies like Bonneville to be creative in their conservation programs and to put significant resources there.

Chairman WYDEN. One other question for you that I have talked about with Mr. Yaden. I would be interested in the State's opinion as well. The House voted to add more oil to the strategic petroleum reserve, and I think it would be fair to say that the Bush administration feels that the next several weeks is really a key period in terms of an oil crunch.

There is a real debate with respect to how you use strategic petroleum reserves. Some in the administration say you basically just wait until there is an absolute, total, all-out shortage. There are a number of others—myself and others—who feel that you have to use it earlier than that. You have to use it earlier than that to counter some of the prices.

What is your assessment of the State in terms of using that strategic petroleum reserve?

Mr. GRAINEY. I guess, frankly, Congressman, we see some advantages to both approaches, and it is hard for us to give a first-hand judgment. What is distressing to me, though, about the strategic petroleum reserve is I think we could have done both if we had met the targets that reserve was intended for.

That was originally intended to meet all this Nation's imports for 6 months. A few years ago our rate of usage a day would have allowed that. That reserve now would last about 90 days. It would only replace about half our imports. We have gone back into this mode of wasting oil, and we are importing more oil now than we generate and produce, and we are very, very vulnerable. That strategic petroleum reserve is just not a very effective weapon for us; not the way it should have been.

Chairman WYDEN. Let me ask you one other question, and then I will go down the row. We will start with Angus and Ms. Hickey on this question of energy conservation and rates.

Why do you think Oregonians are not purchasing the fuel-efficient cars? I received a report yesterday. For example, GM has a car out, the Geo Metro, an imported sub-compact, that is getting 65 miles per gallon. Why do you think Oregonians are not buying these fuel-efficient cars at this point?

Mr. GRAINEY. I think it ties into a number of the reasons that Angus and I both touched on. Part of it is marketing. These cars are not being marketed. It is very hard to order these. The American manufacturers in particular are marketing the larger, heavier, less-efficient cars. The incentives, the efficiency and usage is not a major factor in people's budgets. It just does not cost very much to drive an inefficient clunker around. Somehow, that thing needs to be addressed.

Chairman WYDEN. Let us turn to you, Angus, and start with this question in terms of the overarching national policy and the possibility of actually tying power rates to conservation strategies.

Mr. DUNCAN. If I could embed one idea in your mind to take back to Washington, it is the notion that we ought to be treating conservation as a resource. We should not be treating it as a morality issue. If we start doing that we are going to lose the issue. We should not be acquiring lots of conservation because it is a good thing to do. If we have it priced right, then we will acquire a lot of conservation, but if we start urging policies that acquire more conservation than is justifiable in a reasonably priced marketplace, then we are going to lose the issue.

I would be very resistant to a national policy which elevated energy conservation to something other than an energy resource. We fought very, very hard to get that concept into the Northwest Power Act. It is there, and we are using it. We have the opportunity to base most of the next 20 years worth of new supply in the Northwest on conservation because we treated it as a resource and not as a value judgment.

Now, it is important that we price it correctly, and, by and large, we are not doing that. Give a lot of credit to the State of New York because it is not just trying to treat conservation as a resource and allow a return on investment for it; it is simultaneously trying to value the environmental external cost of a range of resources, including conservation, so that you make a correct choice.

Most of us do not do that. In the Northwest, at this point, we do not do that. We edge a little bit toward it, but we are not there yet. So, that is a real critical factor to me. Any kind of fussing with the way we treat conservation—regionally or nationally—has to start from that premise.

Chairman WYDEN. To just expand on that then, because New York, for example, considers these external factors—and that was the model that I find attractive, and I gather you and Mike do as well—could you see if these external factors were put in so that the rate of return to a utility reflected that and that would have some possibilities?

Mr. DUNCAN. Absolutely. I had a long argument with some folks several weeks ago. They wanted a whole series of tools cranked into the resource selection process to bump up renewables. They were doing it because renewables were a good thing, but that is not the right reason to do renewables. The right reason to do them is because they make economic sense when you consider all of the costs.

Chairman WYDEN. With respect to conservation, Angus, how far do you think we can go with conservation and, in particular, what fraction of possible new demand could we meet with conservation?

Mr. DUNCAN. That depends on what you contemplate for new demand. In the Northwest, we have everything from a flat demand curve to an extremely, in fact horrifyingly, steep one. We have varying estimates of how much conservation is out there.

The power council has adopted a figure assuming very high load growth over the next 20 years—somewhere around 2,500 to 3,000 megawatts of conservation out there. There are other credible voices in the region who say no; there are probably 5,000 to 6,000 megawatts of conservation out there.

I am inclined to think, depending on the way the market goes, the truth is somewhere in between, but I think it is closer to the higher figure. I also do not think it is worth spending a lot of time and effort arguing about what the right figure is. The important thing is to have the tools there to deliver and then to use them.

Chairman WYDEN. Have you had a chance to take a look at the proposal offered by the Northwest Conservation Act Coalition?

Mr. DUNCAN. In detail.

Chairman WYDEN. They assert in their proposal that a proper conservation acquisition program could capture as much as 7,000 megawatts of cost-effective energy efficiency over the next 20 years. I gather that you all have calculated significantly lower than that—maybe 3,100 or 3,200. Why the difference of opinion between the two?

Mr. DUNCAN. Certainly part of the difference is in sort of the underlying assumption, but when the NCAC brought that figure to the council, I had our staff bring them in with the folks who did the calculations and sit down and walk us through those calculations to see whether the numbers that they were advancing were credible or not.

The conclusion I came away with, which is supported personally by the fact that I have spent 6 or 8 years of my professional life rooting around in mechanical rooms, and steam tunnels, and so on, is that they were probably closer to right than to wrong because, among other things, they assume the availability of efficiency technologies in the Northwest that are not here yet, and the council does not.

I think they also assume that the market will draw additional efficiency technologies into being available that we are not counting on yet. The council, as a matter of analytic credibility, does not. There is not that dramatic a difference, at least between my view of what the world is and how much conservation is available, than the NCAC's. I think they are right. I think it is available.

We have seen in the 1980's with low-energy prices, and almost no interest at all on the part of Government in energy conservation, that lighting technologies, for example, are substantially more efficient and available that can reduce the cost of lighting by 50 percent, 60 percent, 70 percent.

Those technologies emerged in the face of depressing market signals. If we now have market signals that say we need to have more energy, and we are willing to pay more for it, that introduction of new conservation technologies will accelerate.

Chairman WYDEN. Rich mentions Canada has taken their standard light from 40 watt to 34 watt, which would presumably produce enormous energy savings. Is that the kind of thing we ought to be looking at?

Mr. DUNCAN. Oh, yes; in fact, there are significantly more substantial savings than that which are available. Emery Lovins, who pushes the envelope about as hard as it can be pushed, suggests that between standard practice today, and what is commercially available somewhere in the country today, you could save 70 to 80 percent of the electricity that goes into a standard commercial lighting fixture.

Chairman WYDEN. I have a couple of other questions. One that I am interested in, from the standpoint of the Northwest, involves cogeneration and the small sources. They have been important in California. I gather that some of them have been fairly expensive, as well.

What role do you see for small sources upcoming in the Northwest energy picture, and how is the power council factoring that into its agenda?

Mr. DUNCAN. I should preface it by saying one of the reasons they have not shown up much up here—except for hydro, and that was pre-1980's—is that we have had a surplus, and our power costs have been very low. They do not invite that kind of innovation. I think that is pretty clearly changing in the 1990's.

The council now has a working draft of its new power plan out, or at least the action items of it, which says that we ought to be taking these things seriously to the point of commencing 30 megawatts of demonstration geothermal in the Northwest, 30 megawatts of demonstration wind in the Northwest, and we ought to be out looking for the niches where solar photo voltaics are cost effective. There are quite a number of them in the Northwest already.

The council's plan at this point, as I recall, assumes that over the next 20 years, we can probably get 300 to 400 megawatts of geothermal and 300 to 400 megawatts of wind into the resource mix. I think that is extremely conservative, and it is based on cost of output which is frankly pretty dated.

One of the reasons I got 30 megawatts of wind into the draft action plan is that I just pitched some utilities, and I pitched some council members. I said, you all think this is 15-cent-a-kilowatt-hour electricity. I think it is 6- or 7-cent-a-kilowatt-hour electricity. Why don't we just put something in there that will either prove you or me wrong? Let us say we will buy 30 megawatts at 7- to 7½-cent-a-kilowatt-hour electricity. If nobody steps up to deliver it, then I will buy you dinner. If somebody steps up to deliver it, hell, I will buy you dinner anyway. It is a deal. We got it in.

Chairman WYDEN. Now, the power council's mandate is to look at electricity. That is obviously just one part of the equation. Would it make sense to have regional planning and conservation programs and the like for other areas, such as transportation fuels or oil and gas?

Mr. DUNCAN. I am inclined to think not, because those fuels are much more driven on a national market basis, and we do not have a whole lot of control over planning of those. We pretty much have to accommodate to price structures which are national or international in scope.

We can certainly insulate ourselves from the sometimes very volatile swings in those fuels, and we have done so to a great extent, but we have access to, and some management control over, our electrical system. We have less over gas supplies and oil supplies.

I should add, though, that I believe, and I also put into our draft 1990 plan, that we ought to be spending a lot more time contemplating the interactions between electricity and gas. We ought to be looking for opportunities where the right fuel is applied to the right application. We ought not to assume that is necessarily going to be either electricity or gas in one situation or another, but whatever is the most efficient use of the fossil fuel is the use that ought to be applied.

We are going to be looking very intently, I think, at interaction between those two fuel sources in home use, in cogeneration, in combustion turbines, in a number of circumstances. I think there is a great deal we can do.

Chairman WYDEN. So, of those three that I mentioned, transportation fuels, oil, and gas—and maybe I am going to get you back into this for a second, too, Mr. Grainey—your sense is regionally there are more opportunities for us in gas than there would be for us in transportation fuels or oil?

Mr. GRAINEY. Yes.

Chairman WYDEN. My question to both of you, though, is how can we really promote our region's energy security if we are not taking steps on some of these other areas such as oil, and gas, and transportation fuels? I am sure you are aware that some think that there should be regional stockpiles of petroleum products and the like. I have found something like that to be a very unworkable proposition, but I would be interested in you amplifying a little bit on this answer.

I would start with you, Mr. Grainey. In terms of these major fuel sources—transportation fuels, oil, and gas—that are so powerfully driven by Federal policies, what can we do to better ensure our security even in those areas?

Mr. **Grainey**. Congressman, I agree with Angus that it is much easier to plan on a regional level for electricity than the other fuels.

There are some things that we are doing in the petroleum sector, though. There is an active group called the PAD 5 group. That is essentially the seven Western States that have a coordinated planning function and contingency plans in the event of supply disruptions that U.S. DOE works with us on.

Chairman **Wyden**. Have they been meeting since August, and, if so, what have those discussions been about?

Mr. **Grainey**. There have been a lot of phone communications, but no meetings since the Iraq crisis has started.

Even with those meetings, the agenda is very limited. It certainly is nowhere near the scope of a comprehensive regional planning group like the power council is for electricity. With natural gas, there is even less ability to coordinate on a regional level. I think it is because they are national markets.

I think the thing that the States can do best, both locally within the State and regionally, is to prevent shortages, prevent panics, premature shortages, people getting in long lines for whatever commodity it is—gasoline, or heating oil, or whatever—and making the fuel unavailable.

That is really the function of this PAD 5 group. The thing that we need the most help on is from Congress on the national level for these various measures that we talked about earlier that really have to be applied nationwide in terms of pricing signals to the petroleum industry and for transportation usage.

It is just too easy to go out and get in your car and drive some place by yourself, compared to alternatives. There are just not the alternatives in most areas available for mass transit, for car pooling, for other things. The States can do some things individually, but not much. We really need help at the Federal level.

Mr. **Duncan**. Ron, if I can reply for a second?

Chairman **Wyden**. Yes.

Mr. **Duncan**. Very quickly, the best reserve that we can come up with, and the simplest one, and the one that is most successful to us, is higher efficiency vehicles, appliances, and homes. To the extent that we are insulated from the kind of swings in international fuel marketplaces that cause disruptions at home, that is where we ought to be spending our time.

Chairman **Wyden**. Let me turn to you, Ms. Hickey. The President has proposed an accounting change in the way Bonneville deals with the cost of conservation, proposing that conservation be treated as an annual expense rather than a capital investment. BPA would then be paying, in effect, for all of it in 1 year.

My question to you is, particularly right now when conservation is so key, and it is so important to look at promoting conservation, would this proposal put us at a disadvantage compared with other resources?

Ms. **Hickey**. There are two parts to that answer. Right now I think no; it would not put us at a disadvantage with respect to other resources because we would still follow strictly the guidance of the act to treat conservation as a resource. So, what you are talking about there is an accounting change that would show up differently in rates. It would mean there would be a more significant rate impact for choosing conservation as a resource, but rates are only one factor of what we look at, so we would go ahead and do the conservation.

Chairman **Wyden**. I have to tell you that in the Third Congressional District, people look at rates. What you just described would not be seen as helpful by most Oregonians because what you just described is that conservation would show up with higher rates.

I am going to be opposing that proposal, and particularly now. I just hope that we can turn the President around on it because it seems to me that the first thing that happens when you talk about accounting changes, whether it is in Washington or my district, everybody's eyes glaze over. You said the magical words.

This is an accounting change which would produce higher rates as a result of conservation. I just think it would really send the wrong message. I do not want to shoot the messenger. You are kind to be here on Saturday, but I just think we have to turn the President around on that.

World fluctuations in oil prices have direct effects on electricity production in areas like the Northeast. There, of course, they burn oil to make electricity.

What kind of impact do you think we will see here?

Ms. **Hickey**. We have had a lot of internal discussion about that recently. The Northwest is fortunate in terms of our relatively low reliance on fossil fuels. Right now, Bonneville basically has no fossil fuel resources.

We have about 1,450 megawatts of gas turbines in the region that are not run very often; so, for the immediate future, it is not having a real significant effect. However, we are interconnected along the whole west coast, and fossil fuels are definitely a major part of the system in California.

Already, we see certain price effects on what we can sell power for, and what we can buy replacement power for. Our sense at the moment is that there would be no acceleration in the mideast confrontation. Basically, what we are going to see are impacts that would come through the economy and that the Northwest growth, that was already moderating to some degree, will moderate slightly more.

Unless there is some new escalation of this conflict, our sense is that the Northwest is fairly well positioned to weather through this.

Chairman **Wyden**. Do you think this could result in higher prices for the Californians for the power we sell to them, thereby, for people who are going to be following this, producing more revenue for us?

Ms. **Hickey**. Right now, as I said earlier, Bonneville is in a situation where we are in load/resource balance, so our loads exactly match our resources, and BPA is no longer making surplus firm sales to California.

The way that our revenues would be affected is through nonfirm sales, and, in the 4 out of 5 years we would have nonfirm to sell, it might impact the prices we receive, because we would be displacing the even higher costs of marginal resources in California. There is a fixed limit on BPA's cost-based nonfirm energy rate to California that is equivalent to our average priority or public firm price, so it is not likely to be a substantial revenue gain.

Chairman **Wyden**. Let me ask you the question I think Angus touched on as well, the relationship between electricity to gas, natural gas specifically.

You, at Bonneville, are primarily in the business of electricity generation. Over the years, on this question of fuel switching, which obviously has been controversial, my own sense is that what we ought to be doing in Government is not encouraging one fuel over another, but taking every step to encourage use of whatever fuels are most efficient—that is the bottom line. This public policy—again, the overarching kind of policy—we ought to be encouraging the use of whatever fuels are most efficient.

What is Bonneville doing to look at this kind of concept in terms of dealing with the issue of the relationship of electricity generation and natural gas?

Ms. **Hickey**. We have performed limited studies on this issue, but I would not couch them in terms of the relationship between electricity and natural gas. Let me describe them.

As we looked at resource options, future gas turbines begin to play an extremely important role, because we have nonfirm hydro that we can displace those combustion turbines with and take advantage of the nonfirm for this region rather than for the Southwest.

As we began to look at use of gas on our system, questions began to rise about whether or not that was the most efficient way to be bringing gas to the system.

That issue intersected with another one that fascinated us—the global warming question. We began to look at strategies for the Northwest and how to avoid building resources that later were going to be significantly regulated and removed from our resource mix because they contributed too significantly to global warming.

As a part of that, we looked at fuel switching as an option, fuel switching in the Northwest, so that more of the needs along the west coast would be met by hydro and displace fossil fuel generation in California. As you might imagine, there was not a lot of widespread support for that idea among our retail customers.

At this point, something is happening that I think is quite natural. We are couching that issue principally as an environmental issue. We do feel that there are places where fuel switching will make sense, particularly in homes that have gas space heat and electric water heat. There is not an insignificant amount of that.

Our hope is, and we are moving in this direction, to encourage our retail customers to take actions where they feel, as Angus has been emphasizing, that it is a good business opportunity for them, and that it is a resource for them.

Chairman **Wyden**. How are you encouraging your customers to do this? Let me just make sure I understand for the record the evolution of what went on.

You put out a study, I think, that said the region could save $1.5 billion and help fight global warming if more people switched to natural gas water heaters. Now, was there a set of proposals after that study which perhaps are what you are talking about when you say we are encouraging our customers?

Ms. HICKEY. We do not have a specific set of proposals at the moment. We are doing a major environmental policy study on all of our resource options to quantify the environmental costs of future resource actions. Fuel switching, as an important moderation of an environmental cost, will be a part of that study.

In addition, as I mentioned, right now, we have a billing credits solicitation, and are seriously considering treating fuel switching as a resource in that solicitation, but we found a technicality.

Fuel switching does not meet the regional act definition of resource, so, right now, we are studying what we need to do, and what sort of process we need to go through, in order to get that issue in front of our customers. What we would like to do is create a framework where our customers could bring us proposals on fuel switching on their own initiative and have us respond favorably to them.

Chairman WYDEN. Do you anticipate the agency coming to our delegation, particularly those of us on the energy committees, and asking for statutory change to correct this technical glitch?

Ms. HICKEY. No. I think we feel that within our current authority, we are going to be able to do that, but it is not the kind of surprise you should move into at a late date. That is the situation we found ourselves in.

Chairman WYDEN. Mr. Duncan, do you want to comment?

Mr. DUNCAN. Yes; I did. In the first place, I fully expect that Bonneville and the council will sit down and have a real thorough discussion of this before either of us steps out very far on it. As you know, the term fuel switching has become a fairly volatile term. To some electric utilities, it is absolute poison, and to some in the gas industry, it is the beginning and end of received wisdom.

I had a very instructive conversation the other day with a utility executive from a utility which supplies both gas and electricity and, therefore, is not embedded in this competitive marketplace—this market share exercise. He was following instinctively what I have been trying to say rhetorically, and that is that it is not an issue of what is the best fuel. It is an issue of what is the most efficient conversion of a fossil fuel to a usable good.

In some cases, that may well be gas, and, in some cases it may be electricity, but we should stop using the term fuel switching and start using the term high efficiency path. If we anoint one fuel or another, to the extent we do so, we basically allow the supplier of that fuel to sell it for less efficient uses. It creates exactly the wrong—the opposite—market incentive.

We are discussing right now with the Department of Energy and the Oregon PUC whether or not Oregon ought to institute some sort of signal for home buyers that basically instructs them in what is the most efficient selection of a home heating system. It may, in some circumstances, be a high-efficiency gas furnace. It may, in some circumstances, be zonal electrical resistance. It may, in some circumstances, be a heat pump.

We ought not to presume ahead of the fact which one it ought to be, but we ought to create a very active incentive for it to be the most efficient choice and a corresponding disincentive to select a less efficient choice.

Chairman WYDEN. I think that is a thoughtful answer, and you are absolutely right. The jockeying has already begun in terms of the fuel switching debate with natural gas and electricity both sort of pounding on each other. That is why I have tried to stake out a position, I think, very similar to yours.

The bottom line here is we do not need another turf battle between energy sources in the Northwest. We need to make sure that the message is that we are going to look to promoting whatever fuel is simply the most efficient.

Mr. DUNCAN. Another turf battle in which efficiency gets caught in between and slaughtered first.

Chairman WYDEN. Right.

Did you want to add to that too, Mike?

Mr. GRAINEY. Yes, Congressman.

Our position at the Department of Energy is that the use of all the fuels has to be efficient. We are going through a State building code review right now at the administrative level, and we have been pushing very hard for new energy efficiency requirements for electricity and for natural gas.

For natural gas, those energy efficient requirements have been the source of a lot of controversy, but we think it is critical that whatever fuel we use be used very efficiently.

Chairman WYDEN. One question for all three of you. What about this matter of the fragmentation of Federal energy policy with DOE, EPA, and Interior. It is sort of just strewn all over Washington, DC.

What has that done to affect your ability to promote the region's needs, and what suggestions might you have to address it?

Mr. GRAINEY. Congressman, you have certainly characterized it very accurately. It is a fragmentation, and we have not had, I think, an effective national energy policy for 8 years now.

I was encouraged with the fact that the new Secretary of Energy was developing a national energy strategy. I have been discouraged by how long it has taken and by the apparent shopping list of proposals that are going in and the lack of prioritization of what is going on.

I think the discussion you had earlier with Ms. Hickey about the OMB proposal on rate changes for BPA and how they expense conservation is just a prime example. That would be a very, very serious negative impact on energy conservation, and we strongly oppose that as well.

Chairman WYDEN. The accounting change the President has proposed?

Mr. GRAINEY. Absolutely. It is those types that an OMB can interject as a road block to a regional agency like Bonneville that hurt us on the regional level, particularly when there is no national policy. If we had a coordinated national policy where everyone was pushing in the same direction, then those types of things would not happen.

In the absence of that national policy then, the States at least need to be able to do the things that make sense with the regional agencies like Bonneville and the Northwest Power Planning Council.

Chairman WYDEN. Mr. Duncan.

Mr. **Duncan**. You may recall that fragmentation in national energy policy was precisely why, back in the 1970's, the U.S. Department of Energy was created. We were going to consolidate that structural set of glitches at the national level, and we did so.

We do not have a particularly better national energy policy, it would be fair to say, at least among those here at the table. There is, presumably, a reason for that, and it, presumably, is not a structural reason and does not imply a structural solution.

Energy is sort of like money. It is a common currency of a lot of different people's activities, including a lot of different Government agencies' activities. Given that character of it, you are not going to consolidate energy issues, nor should you even particularly try hard to. What you ought to do is have a fairly coherent set of principles that the different agencies will operate consistent with. If you have that, that is a much better solution than a structural one.

Chairman **Wyden**. I think that is the only thing that is being considered. Don't walk away from this with anybody saying that now they are going to go back and be another super agency. I think it is a question of building from a set of principles so each agency, in effect, has a mandate. Obviously, the EPA mandate is different than the Department of Energy. It is singing from the same hymnal. It is singing from the same set of principles.

I think what Mr. Grainey was talking about is concerning a lot of Members of Congress. Based on what we have heard, and I have asked, as I mentioned in my statement, the general accounting office to do an analysis of where we are right now in terms of the methodology of the national energy policy. I am concerned that what the President is basically going to get is a smorgasbord. They are going to send him up 50 principles, and then we start the process.

I think your response is a thoughtful one in trying to lay out what you call a set of principles—the elements from which every agency is talking about—is really the heart of that.

Ms. Hickey.

Ms. **Hickey**. As a representative of the Federal Government, if I could move beyond the fragmentation characterization and address your question as to how it is perhaps inhibiting our work, there are a series of things.

We have been highlighted as a part of the Department of Energy over the last several years. There is a renewed interest in the things we are doing in the Northwest. We have been asked how can we help.

Some of the things that we have made entirely clear, Angus has mentioned already. We could use some help with Federal standards for efficient equipment. That is something that is extremely hard to do out here.

Chairman **Wyden**. What kind of equipment?

Ms. **Hickey**. Particularly appliances, but Mike also mentioned manufactured homes. That is one that has been a particular challenge for us as well. There is a real role for the Federal Government. We have been fairly successful with Federal fuel efficiency standards for automobiles, as we have said as a panel. Moving into other areas more aggressively would be extremely helpful to us.

In addition, we are willing to do a certain amount of R&D on the potential thousands of megawatts of additional conservation because we think it will benefit our rate payers. There is also a certain part of that which is a Federal responsibility because it has a broader impact than just in this region. We feel fairly strong that encouraging regional planning is the way to go.

Finally, and totally off the subject, it is clearly a Federal responsibility to deal with long-term nuclear waste repository, and that is something we all are, as an industry, waiting for and are concerned about.

Chairman WYDEN. On this point of the standards, I would be very interested in following that up with you. Could you, at Bonneville, prepare a memo for me on how you think some of what you are doing could be incorporated into national standards in some of these areas?

Ms. HICKEY. Certainly. We would be pleased to.

[The information may be found in the appendix.]

Mr. DUNCAN. Just to add, Congressman, that we should be instructed by both the successes and the failures in the auto fuel economy standards. The success is that we have a substantially more efficient fleet now than we did 15 years ago. The failure is, that when that higher mandated efficiency is not accompanied by the right kind of market signals, it becomes counter-effective and counter-productive. It is basically the law of unintended consequences. We did not intend to make it easier for people to drive more and, therefore, use as much gasoline, but they did.

Standards are centered kind of like the brush fire behind us that is supposed to be pushing us onward. We also need kind of a sniff of the water ahead as well. That has to be in the marketplace. The two have to operate together.

Chairman WYDEN. I was not going to ask you this—Mr. Grainey as well, I know you want to hit the soccer field with your child—but, on this question of the gas taxes, have you done any assessments in the two areas that the strong opponents speak out about?

One, the question of the impact on the regional economy—we are, of course, a region where people drive long distances; it is a way of life; and second, the impact on the low income because there are inherently regressive taxes. Have you done some assessments with respect to those two points, Mr. Grainey?

Mr. GRAINEY. Congressman, we have not done an independent assessment. We have reviewed the work of others. I think clearly you would have to have some adjustments. That is why we called for increases for low-income weatherization, for example. You would need help on fuel assistance for low-income people, particularly for the heating oil season. There are adjustments that would need to be made, but we think that we need to bite that bullet, or we are never going to solve our energy problems.

Mr. DUNCAN. I have to hark back to an earlier life because the power council does not deal a lot in gasoline, but I spent a year and a half as Director of Energy Policy for the U.S. Department of Transportation, and we spent a fair amount of time looking at this issue. I came away convinced that in the short term the solution was not just jacking up prices for precisely the reasons you just alluded to. It hurt some people disproportionately.

In the short term, a better solution is one that preserves a substantial measure of personal mobility. A car which can travel 40 miles on a gallon of gasoline provides more mobility than a car which will travel 20 miles on a gallon of gasoline. If a low-income person or a person who lives in a State with big distances between points has access to that 40-mile-a-gallon automobile, his mobility is preserved, and so what we ought to be looking at is encouraging that higher efficiency vehicle, not just increasing the cost of gasoline.

Over the long term, though, the price of gasoline ought to be up—needs to go up—both to encourage that 40-mile-per-gallon vehicle and frankly, ultimately to change some of the patterns in the way we live and do business, so we are not driving 50, 60, and 80 miles to get to work, and we are not driving one passenger to a car if we can drive two, three, or four, and we have incentives for urban mass transportation systems as a reasonable alternative that still assures that personal mobility.

We contemplated, some years ago when I worked in this building as an assistant to Mayor Goldschmidt, the issue of emissions pollution standards from automobiles. We knew that if we required a certain level of cleanliness out of the back end of an automobile it would disproportionately hurt low-income people, but we also concluded that because you are poor does not mean you have an inherent right to pollute.

Poorness is something that needs to be dealt with through tax policies, and other income distribution, and wealth distribution measures, but it ought not to be dealt with by allocating more of the air shed to dirty up to low-income people and neither does wasting fuels. There are other better solutions.

Chairman WYDEN. That is a good point to raise. I think the key is to bring everybody into the equation.

What has concerned me about energy policy is, yes; you can have somebody who is affluent who is in a position to buy a new car or go get one of these Geo Metros, that I was reading about on the plane coming out, that gets 65 miles per gallon. They are in a position to accept some of these proposals, and yet in my district where there are a lot of low-income people, a lot of older people, it is fine to talk about things like national energy strategy, but unless they have the tools to be part of it, they are going to get crunched.

Mr. DUNCAN. Is the solution to permit vehicles that get 12 and 15 miles to the gallon, or is the solution to put some more money in mass transit, so they have more choices for personal mobility and to make sure that a 40- or 50-mile-per-gallon automobile is available to them? That, I think, is the solution; not wasting energy.

Chairman WYDEN. You all have made excellent testimony. I hope we get a chance to work with all of you on a regular basis. We appreciate the opportunity. I think just the fact that you are here on Saturday, when you would like to have a little bit of free time which you do not have much of is an example of your commitment to public service.

We thank you. We will be in touch. Unless you want to add anything further we will excuse you.

Mr. DUNCAN. Thank you, Congressman.

Mr. **Grainey**. Thank you.

Chairman **Wyden**. Our next panel is Mike Sherlock, president of Oregon Gasoline Dealers Association.

Mr. Sherlock, we welcome you. It is the practice of our subcommittee to swear all the witnesses who come before us. Do you have any objection to being sworn as a witness?

Mr. **Sherlock**. No; I don't.

[Witness sworn.]

Chairman **Wyden**. We are going to make your prepared remarks, Mr. Sherlock, a part of the record. I have had a chance to be briefed by the staff on some of your concerns. You obviously are right in the eye of the storm, particularly since the next few weeks are being seen as a period where we could have a more severe crunch than we have.

Your views are extremely important, so we welcome you. Please proceed.

## TESTIMONY OF MIKE SHERLOCK, PRESIDENT, OREGON GASOLINE DEALERS ASSOCIATION

Mr. **Sherlock**. I think it is interesting that I am a panel of one.

Good morning, my name is Mike Sherlock, and I am the president of the Oregon Gasoline Dealers Association. On behalf of the OGDA, I appreciate the opportunity to speak to you about the challenges facing Oregon in the area of motor fuel supply at a fair price. Today, I would like to talk about directions we believe should be taken to address the problem.

While the issues are obviously important to those of us in the gasoline retail business, the impact on the State can be very serious. There are two major issues. The first is the availability of motor fuel to the public. This means that not just gallons need to be available, but they need to be available at enough retail outlets so the motorist does not need to spend unnecessary time searching out or waiting at locations that are left.

The second issue is whether the concentration of motor fuel suppliers provides an opportunity to impose unreasonable prices on the State of Oregon.

These issues have been before the State since automobiles and trucks became a dominant means of transportation, but they are even more critical today. Perhaps the best lesson of the 1980's is that the speed of change in our society is accelerating. Lead times to adapt to change are shorter. To use an analogy from automobiles, we must drive with our lights on high beam because, at the speed we are going, low beams do not provide adequate warning.

In the area of supply, a small miscalculation can mean gasoline lines and interruption of our normal transportation system. In 1973, when we experienced a major shortage, the State of Oregon had approximately 3,194 service stations. The increase of demand in gasoline usage grew only 6 percent per annum through 1972, and the reduction in supply was less than 5 percent.

At that time, there were nine major suppliers in Oregon—Gulf, Arco, Shell, Amoco, Texaco, Mobile, Exxon, Unical, and Chevron. In addition, there were several significant independent suppliers.

Today, we have approximately 1,700 stations in Oregon. The number of significant suppliers has been reduced to six, including Unical, which is in the process of partial withdrawal. Exxon alleges it is already out of the Portland metropolitan area. Shell has withdrawn from direct supply in Oregon and is in the process of withdrawing in Washington. Mobile, Amoco, and Gulf have previously withdrawn from the marketplace.

The great majority of our motor fuel comes from the four refineries in the State of Washington. A breakdown at one of these refineries, or an increase in the Nation's demand for heating oil, or a shut down for repairs at one of the refineries could quickly put the Northwest into a shortfall. Since 1980, the refinery capacity on the west coast has moved from a surplus refinery capacity to a shortfall. This means that Oregon is in greater competition with the rest of the west coast for refined product available.

Today's environmental needs further complicate the picture. Many station sites will be closed down in the next year. Some industry observers suggest that stations pumping less than 20,000 gallons a month will not be able to afford the updating required to continue in business.

How do major oil companies respond to a tight supply situation—a seller's market? First, major oil companies are disinvested in central and eastern Oregon, parts of the coast, and rural areas, leaving these areas to jobbers and distributors. In many situations these jobbers and distributors have experienced an increase in price and a lack of commitment from major oil companies for long-term supply.

At the same time major oil companies have focused on, and are investing in, company-operated, high-volume locations along the I-5 corridor. For every high-volume—that is 200,000 gallons a month—company-owned unit, the oil companies have moved to eliminate four or five neighborhood units. At the same time the price in Oregon has gone up substantially.

If Seattle is a reference point, as it historically has been, for the prices in Oregon, gasoline prices in the State of Oregon are now unexplainably high. The result has not been good for Oregon. Many smaller jobbers and distributors uncertain about their future with the major oil companies have been hesitant to invest in equipment and facilities required to service the public in the future. It also has been tempting for jobbers and distributors in the rural areas to take a short-sighted view by substituting car blocks for retail outlets.

It is not my purpose here this morning to go into detail on the car block issue, but to point out that, in order to have an adequate motor vehicle distribution system outside the metropolitan areas, there needs to be more of a commitment by the major oil companies to supply jobbers and distributors at a fair price so that they may invest in moderate retail operations.

As I have suggested, at the present time, the State of Oregon is highly dependent on six oil companies to supply its petroleum energy needs. While the State's Department of Energy does a credible job with the resources available, it cannot predict short-term supply availability nor monitor reasons for substantial price hikes. The State of Oregon has virtually taken no role in overseeing the manner in which these companies are dealing with the State of Oregon.

Over 70 percent of the supply of gasoline to Oregon is in the hands of Arco, Shell, Chevron, Texaco, British Petroleum and Unical. This figure may be higher, but based on the DMV revenue statistics we are not able to identify the source of supply of some of the smaller taxpayers.

Should the Government review more closely these companies' actions? Our attitude has been that the competition will protect the marketplace. Are these companies vigorous competitors? Based on the information available, it appears that every major oil company operating in Oregon is either a customer of the other companies, a joint venture, or a common owner of a corporation with the other companies. Our information indicates that the coventures include joint ownerships of pipelines, oil field developments, development companies, or product exchange agreements.

The point is, with the cooperation or common interest among the oil companies, it is natural to suspect that there is not the same competition as there would be between companies who have no common ownership or interest.

In short, we believe that Oregon is facing a situation of greater concentration of power in the hands of fewer suppliers. We are seeing an already short supply getting even shorter, and we are seeing a tremendous reduction in the number of locations where consumers can buy gasoline at retail. This problem is statewide, but is particularly severe in areas of the State outside the I-5 corridor.

It appears that Oregon consumers are being overcharged. In 1989, this overcharge was over $1 billion.

What can we do about these problems? We think there are several areas in which action can be taken. Our first suggestion is that an investigation be started on the concentration of power by the major oil companies. If Oregon consumers are found to have been overcharged, appropriate legal action should be taken.

We also think that franchise laws, as they apply to the gasoline distribution business, should be upgraded. On the Federal level, the Petroleum Marketers Protection Act is currently being reviewed with you, Congressman Wyden, leading the fight to force major oil companies to deal with franchisees in a fair and reasonable manner. In the State of Oregon, the legislature is hearing testimony on a truth in franchising law that we have proposed. Improvements in these laws can help reduce the power that major oil companies now have over the marketplace.

We also support proposed legislation that prohibits major oil companies from operating service stations in the retail market. This divorcement law will protect consumers by not allowing refiners to control the oil market all the way from the well head, through the refineries and pipelines, to the ultimate consumer. Major oil is in the process of eliminating the dealers who are the last vestige of competition left in the marketplace.

Mr. Chairman, this concludes my formal presentation. I would be happy to answer any questions.

Chairman WYDEN. Thank you very much. You certainly made it within 5 minutes and said it very well. I want to thank you for throwing me a bouquet as well. We are hoping we can get a fair shake for the franchisees. As you know, some of the treatment of the franchisees is outrageous.

Let us just get on the record a couple things that relate to the bargaining power because I think you really touched on the key points—how tough it is for that person to have some real bargaining power.

If one of the service station dealers does not like the terms that they are getting from their supplier—one of the big oil companies—there really is not anything that a small service station dealer in Oregon can do about it, is there?

Mr. SHERLOCK. That is correct. I have a station that we have not had open 24 hours. It is economically totally unreasonable to be open 24 hours because we are next to a shopping center that closes down at 10 p.m. at night. We stay open until midnight to service the employees who work until approximately 11 p.m., but, between the hours of midnight to 6 a.m., nobody drives by.

My oil company—my supplier—has insisted that we be open 24 hours. When I argued about it, they said hey, there are plenty of people who would like to have your station. Either sign it or get out.

Chairman WYDEN. If the distributor raises the price—say this was just a pricing situation—the dealer just has to pay whatever the price is and have Oregonians go to the pump and just be livid because there is nowhere else they can turn.

Mr. SHERLOCK. That is correct, and not just livid, but they take it out on us.

Chairman WYDEN. Let me ask you about one question we have not talked about, but there has been some discussion of in Washington, DC.

If you go into a grocery or a department store, there is a store brand—something that they have actually designated as a store brand—but also, competitive products right along side. But, at gas stations, there is one brand of gas as a rule.

What would be your view of the idea of letting gas stations sell more than one brand of gas in separate pumps? That way dealers could feature several brands, make the best possible deal with the distributor, and some are saying that this would promote competition among the distributors and keep prices low.

Would this be an idea in your view that you think is workable and makes sense?

Mr. SHERLOCK. I think that is one of the best ideas I have heard in a long time. That is what we in the industry refer to as divestiture, which means the oil companies would not be allowed to own the locations that we currently operate.

Our ultimate dream would be for the consumer to be able to come into our station, drive up to a pump and have maybe all six brands listed on the pump. The consumer could decide whether a little more quality was worth the extra price and this type of thing, but it would be the consumer's decision, not the only company's market power that made the decision.

Chairman WYDEN. That is going to take a Federal statutory——

Mr. SHERLOCK. No question about it. If you want to see a fight on your hands, big oil will pull out all the guns they have for that one.

Chairman **Wyden**. I am really going to dig into this idea, because I just think we have to inject some competition into this oil market.

To give you an example, the first hearing that was held, the Commerce Committee—I am a member of the full committee—Phil Sharp and the Commerce Energy Subcommittee held these. We were maybe 4 or 5 days into it. All the Members were there, and the people were there from the American Petroleum Institute. Of course, the Members were very hot, and understandably, because they were all hearing from their constituents.

Finally, I said to one of the lobbyists of the American Petroleum Institute, look, I want to ask you just one question today. How many barrels of oil do your people have in their private inventories today?

He was clearly not overly pleased that I was asking this question, but finally he said about 380 million barrels of oil were in their private inventories. The morning paper had said that a barrel of oil had already shot up $5 just a few days into it. I said, look, just as a result of the last 4 or 5 days, your members' private inventory is worth more than $1.5 billion more—just on the basis of the last few days.

I just think we have to inject some competition in the oil market. Somehow, there is this process where everything goes up, but nothing ever quite seems to go down in relation to market forces.

I would be very interested in working with you on this question of maybe having other brands there and having some competition right there at the pump.

Now, service station dealers' rent is sometimes based on volume sold—the higher the volume, the lower the rent, and vice versa. If the Persian Gulf situation results in further shortages—more significant shortages—and volumes are cut back to station dealers, they would presumably have their rents shoot up without the resources to——

Mr. **Sherlock**. That is correct. Basically, in that situation, we would be in big trouble. Almost industry wide—and the companies that have not done it are in the process of doing it—they are changing their leases so that our rent is based on our volume. There is no provision for a shortage in there.

If, for some reason, we went on like an 80-percent allocation, what would happen would be I would only be allowed to sell 80 percent of what I had sold the year before. Consequently, my rent would shoot up. In my case, it would just about double.

So, the oil companies would not only make out like bandits on the high prices they could get on their short product that they control, but they would also take every bit of profit that every dealer has right now.

When we talk to our suppliers, they basically say hey, we will take care of you. Trust us. We do not.

Chairman **Wyden**. How many small service stations do we have in Oregon?

Mr. **Sherlock**. Right now, our figures show that there are about 1,700, which is about half of what there were about 10 years ago. That number is dwindling quickly. There are so many pressures on dealers right now to drive them out of business that it does not take much, and another one goes down the road. We expect, 5 years from now, there will be half the number that there are right now. Most of those will be controlled directly by the oil companies in terms of company-operated stations.

Chairman **Wyden**. Well, we have a lot of work to do. I am going to follow up with you on this question of introducing other brands at the pump.

I think, if anything, you understated what a political fight that would be, but we have to get some competition into this market.

I know that a couple of days into it, oil companies were telling The Wall Street Journal—these are no atomic secrets; they are right out there—they were raising prices defensively. They were flat out raising the prices defensively, because they thought if they did not that there would be a run on their supply.

Well, the whole nature of what is supposed to be a free market is that, yes; you can undercut somebody. You do that because that generates more sales, and you make up for it in volume. Somehow, the forces of the free market just do not seem to exist in the corner of the world that you are in. It is a very important sector.

I hope we can get that legislation through to get a fair shake for the franchisees. I want to work with you on this question of the store brands.

Mr. **Sherlock**. Great. We appreciate your help.

Chairman **Wyden**. Thank you. We look forward to talking to you in the future.

Our next panel, panel three, is K.C. Golden, executive director, Northwest Conservation Act Coalition, Mr. Al Wright, executive director, Pacific Northwest Utilities Conference Committee, Mr. John Jones, executive director, Northwest Association of Gas Utilities, and Mr. Ron Yockim, Oregon Cogeneration Interest Group.

Gentlemen, do any of you have any objection to being sworn as a witness?

[Witnesses sworn.]

Chairman **Wyden**. We will make your prepared remarks a part of the hearing record in their entirety. If you could summarize your views, in the interest of time, that would be very helpful.

We will start with you, Mr. Yockim.

## TESTIMONY OF RONALD S. YOCKIM, OREGON COGENERATION INTEREST GROUP

Mr. **Yockim**. Thank you, Congressman Wyden. On behalf of the Oregon Cogeneration Interest Group, we appreciate the opportunity to appear before you.

Briefly, the Oregon Cogeneration Interest Group is an association of small power producers. Originally, the group was started by operators of wood-fired cogeneration facilities such as Blue Mountain Forest Products in Long Creek, Oregon; Prairie Wood Products in Prairie City; Biomass One in White City; Burrill Lumber in White City; and D. R. Johnson Lumber Co. in Riddle, Oregon.

Later, our membership expanded to include some other small power producers, including the Marion County garbage burning facility and the Douglas County Galesville Dam project.

The majority of these facilities were conceived in the early 1980's to resolve problems unrelated to energy generation. For example, waste disposal, water development, or simply growth in the process steam requirements of the facilities. Not unexpectedly, most were operators with limited experience in the utility field.

They represented the type of operator and the type of facility that the Federal Government, through PURPA, and the State of Oregon, through its mini-PURPA Program, sought to encourage.

To give you an example of some of the problems that we are trying to address, I will use the Prairie City facility of the Prairie Wood Products. They were using the wigwam burners as a way to dispose of their hog fuel—the sawdust and the bark. DEQ was after them to shut them down because of air emissions; justifiably so. In a 3-month period, they would generate enough hog fuel that would probably equal the size of this building.

Now, with their cogeneration facility, they are able to use that hog fuel to produce steam that they use first, to make electricity and second, to use in the dry kilns to dry lumber. That is the inherent beauty of the cogeneration process—using your steam more than once.

At this time we are also looking at using that steam a third time. We are hoping to use it to heat our saw mill facilities—something we have not done in the past. In the past, we simply had a small boiler that would supply steam for the dry kilns.

With the energy forecasts of the early 1980's, most of these operators viewed themselves as white hats. In fact, they were actually courted by the State Energy Department and other groups since they were ingeniously solving their own problems while helping to assist in the upcoming energy deficit picture. This white hat view lasted only as long as the energy forecast predicted a deficit. Once the concept of surplus entered the forecast, the public's perception of us changed rather quickly. We were now black hats.

With this change in perception, we faced numerous attempts by the utilities, the regulators, and the legislators to cancel our contracts or otherwise shut us down.

In our case, we had completed one facility and were in the middle of construction of another when we found ourself facing some political fights in the State legislature to cancel the contracts entirely. The Public Utility Commissioner was reviewing whether they should cancel the contracts, and we had a lot of public outcry over the contracts.

We had some fairly substantial investments between the two plants to the tune of $15 million to $20 million at risk, all of a sudden overnight.

While PURPA was designed to exempt the small power producer from utility-type regulation, we were forced into the utility ratemaking process and eventually the courts. At a great expense—an unexpected expense—we were forced to defend ourselves and our contracts, both in the public as well in the regulatory arena.

Now, with the energy forecasts again predicting a deficit, we are starting to be viewed again as white hats. We like that view a lot better than the black hats.

However, what I would like to point out by that little discussion is, prior to anyone wanting to invest in the type of investments that are necessary for small power production, that is, cogeneration, there needs to be a stability in the legislative/political arena. We need to know that those investments are going to be secure from at least that arena.

We are willing to take the scientific risk and the financial risk, and, in fact, that is one of the beauties of cogeneration for a small power producer. We are taking the risk of such things as cost overruns off the backs of the rate payers. We are taking that risk, but it is awfully difficult for us to build into our equations a political risk of having the whole playing field changed overnight.

We believe that there are tremendous opportunities for the small energy developer in the State of Oregon and in the Northwest as a whole.

We think there are still opportunities for small hydro. There are plenty of opportunities for garbage burners, biomass burners such as we have, and also there are great opportunities for just utilizing your steam twice.

Things like hospitals and schools that use steam heat now, or use steam in their process with some retooling, could be designed to utilize that steam twice—once, to make their energy, and second, to do their heating sources.

We are seeing that in the oil and gas refineries. We are seeing it in the canning plants and the food processing facilities. It is our opinion there are great opportunities to be captured in those areas.

One of the areas that we hear a lot of is the utilization of wood waste, such as what we are doing with most of the cogen plants in Oregon as far as hog fuel. We would like to point out that window is rapidly closing. With the reductions in the National Forest timber harvest levels, we expect to see less of the fuel availability than we have in the past.

We have also seen a very strong demand for hog fuels created in the recent year or two where California facilities are coming up as far as Eugene and Coos Bay and trucking hog fuel back down into California. That was something we never envisioned would have happened 3 or 4 years ago.

I do not want to say there are no opportunities left. I think there are great opportunities for bringing such things as logging slash and insect damaged material out of the woods and using it to supply our fuel sources.

Another area that we would like to point out is the interest in what we found in eastern Oregon. We started out operating under a C. P. National's territory, later taken over by Electric Co-Op. We have had a very good working relation with the Co-Op since they took over the facility, but we would like to note that under the power purchase agreements that they have with Bonneville there would have been no incentive for them to enter into any agreement with us. We most likely would have to find some other way to utilize that hog fuel or go out of business.

We were facing a very serious environmental problem. We think that when we start talking about a small energy program as part of our national energy program, Bonneville has to be a very major player in that. If we had not been able to sell it to the Co-Op, we would have had to wheel that power out of that region over both Bonneville's power lines and someone else's power lines at a rather substantial cost to us. That type of investment may have made the whole idea of cogeneration nonprofitable in that scenario.

One last pitch I would like to make for ourselves, in this day and age one of the things that you want to look at is environmental cost. I will give you all three of our examples.

I think to each of us, our wood generated facilities has met our DEQ—our environmental quality standards. In fact, a couple of our facilities are like one third of the emissions that they are allowed. They are extremely clean burning facilities. They are taking what would normally be a waste disposal problem and converting it into energy. We will go through, I would guess, three silos full of fuel in a day.

A silo—picture your normal grain elevator type silo. We will end up with about a small dump truck about a quarter full of ash. We take the ash and put it on fields—we have some irrigated fields that we use—as a soil enhancer. Interestingly, we take our wastewater, and we pump it on the fields to irrigate those fields. Again, our air emissions are reduced because we take the steam and run it through our dry kilns as part of the cooling process. It helps drop out some of the air emissions. It is extremely efficient as far as an environmental point of view.

We have a very high performance record. A couple of our facilities have been on line 95 percent of the time. We are allowed a 30-day down period for annual maintenance. We usually turn around in about a 2-week period.

I did not envision this to be an exhaustive discussion of cogeneration or what our rule should be in the national energy policy, but I would like to just state that we are ready and willing to put the investments into small power. We are ready and willing to help in any way to assist in development of an energy policy.

[Mr. Yockim's statement may be found in the appendix.]

Chairman WYDEN. Thank you, excellent testimony. I will have some questions in a moment.

Mr. Jones, welcome.

## TESTIMONY OF JOHN JONES, EXECUTIVE DIRECTOR, NORTHWEST ASSOCIATION OF GAS UTILITIES

Mr. JONES. Thank you, Congressman Wyden. Thank you very much for the invitation.

I would like to point out that we do not have a prepared statement to submit to the record. We have our own bureaucratic goo in the natural gas industry, and when we submit that kind of a statement it requires our Energy Policy Committee to authorize it. That prepared statement will be prepared and will be submitted through Rich Brown to you about the 29th of this month if that will suffice.

Let me say that it is not often that in a primary electric forum that the natural gas industry has the opportunity to submit testimony. We are delighted.

I think that the thing that has occurred to me as I began to listen to the earlier persons here is that, while I do have some very specific things that I want to mention, that every time you hear the kind of input that was provided earlier something else comes to the fore. I would like to add that to the record to start with.

I think that all of us should keep in mind as we address the matter of energy policy at the national or even the regional level, this definitely is not the first instance, nor was the earlier one in our recent recollection.

I am not exactly sure whether it was August 17 in 988 B.C. when we had the first one when the mastodons finally disappeared for the hunters in the Neolithic, but, in fact, that was an energy crisis.

We can look at the before station of the Mediterranean as another energy crises. Later on, when the coal mines in industrializing Europe got too deep, and they could not pump the pollutants out, that was an energy crisis.

Chairman WYDEN. You are saying that there were energy policies even before politicians were making commercials about the issue.

Mr. JONES. Thank you, indeed.

Each one of them was insufficient at the time that the sufficiency of those decisions that were driving the policy disappeared into a crisis period. I think that what we see here is a more rapidly occurring sequence of energy crises, which we are attempting to deal with.

Interestingly enough, in most cases, the adaptability of those groups of persons who were driven by their policies found some single resource to move to. The coal problems yielded a petroleum kind of solution. Interestingly enough, we have, because of our technology, far wider resources available to us in terms of energy options, but we seem no closer to developing a reasonable, consistent, supportable, sustainable, and viable energy policy than perhaps those people suddenly confronted with the last mastodon's disappearance.

I am concerned about that. I asked myself, as I was looking at a stack of resources that Angus Duncan and his people at the power council have so cleverly conceived, what is the missing factor here. I am not about ready to suggest that I have the answer to that, but I think that one of the clues lies in the state of American public education. Without an informed public, my guess is that the discussions of the marketplace, the discussions of policy development, and the implementation for such falls on a lot of, if not deaf, unprepared ears.

Probably, you recently saw in the popular press, like most of us did, the reporting that showed that American's scientific literacy was about eleventh in the informed world on an equivalent level with Thailand and Indonesia, which are not exactly paragons of democracy or education.

Before I talk about the natural gas industry, I talk about the insistent need for all of us to be more scientifically literate, not just politically literate. We seem, in this region, to be terribly politically literate, but decisions that I see, and I will perhaps mention a couple of them on the energy side of things, seem to be driven out of an absence of an understanding of the scientific principles that we are operating with.

I would defy a consumer faced with a wide range of options to make a legitimate transportation decision, if you will, without an ability to understand the conversion of energy, or the weight relationships in transportation, or to choose a decision to invest up front a large amount of money in a mass rapid transit program—foreplanning—to realize some benefit down the road when confronted with all of the other problems that come with how to distribute the few dollars that are available to them.

I would encourage you, even though you perhaps do not sit, if I recall, on an education committee or subcommittee, to use your influence to strengthen the awakening need at the Federal level for renewing science education. Science education is only one facet of it.

I know the Department of Energy has recently established, through its national laboratories, a significant program of taking outstanding science teachers to those national laboratories. Congressman, we have 12½ million teachers in this country, and at the very best we will be 750 or so in those national laboratory programs. That is not going to do the job.

I think that the energy situation that we have and the problems with education are intimately linked and need to be dealt with. I would encourage you to do so.

Having done that I would like to talk a little bit about natural gas. The perception of this region as being the same energy-wise as a lot of other parts of the country from the natural gas side is entirely incorrect.

The Northwest is unique in at least two ways from the natural gas side of things. We have two major supply areas. The Canadians, just north of our border, and British Columbia, and Alberta provide about 30 percent of our natural gas. The balance comes out of the San Juan area of the Southwest. We also have tremendous reserves that are being discovered along the Rocky Mountain region.

That natural gas is available to us, and there certainly is a play between those two supply areas which helps to keep some of our prices down.

The interesting thing is, unlike the rest of the country, we do not generate electricity in this region to any substantial extension with natural gas. We have come to a deflection point in this region, and it is driven by the fact that we are once again confronted with a supply balance which may be on the very verge of supply inadequacy.

Suddenly, although the region is electrically dominated politically, the major players are the industrially owned electric utilities, the Bonneville Power Administration and the Northwest Power Planning Council—electric focused, staffed, oriented groups.

Natural gas is suddenly a very valuable resource for solving many of those problems—those electric generation problems. The natural gas industry does not have a seat at the table.

From a policy point of view, we think this is bad public policy because while we were invited to attend the Power Planning Council meetings, and we do read every document that comes out of the council and the BPA, and we do make an effort to respond in writing to the natural gas related aspects, we would submit that perhaps it is time to re-examine the Northwest Regional Power Planning Act itself and to expand it at a critical time to an integrated resource plan where all those groups that have probably the need, certainly if not the right, should be at the table to discuss the interactions of those fuels.

I think I heard Angus Duncan speaking somewhat to that need as well. We cannot do it from the outside. It simply will not happen. The people who have control of the apparatus will take our information. They will screen it through the electric objectives that they have, and we will have a decision with us outside.

To give you some notion about how that can influence and has a potential for influence in our industry, if you take a track that says we are going to use combustion turbines as one of the major elements because they are environmentally benign—gas fired—they don't cost a lot, and you don't see them like you see a central station power plant, all of those things are true.

We could very easily, if we move from peaking to base loading this region, double the amount of gas which is brought into the region to put through those turbine generators to generate electricity.

First of all, there is only one thing that could happen to the cost of gas which is in many cases about half the cost of electricity which is a real deal for many reasons for consumers in this region. It would undoubtedly drive the price of gas probably close to the cost of electricity, which eliminates a real option for a lot of people who find that as a very good economic buy.

The second thing is if you generate electricity with gas you are generating it at 30 or 40 percent of efficiency. You generate the electricity, you take it to the end point. You turn it into hot water or space, whereas if you used that gas directly in the home to heat space and electricity you are talking about doing it at 80 or 90 percent, which we think goes directly to the issue that the Power Planning Council is talking about when they are talking about efficiency and best uses.

I use those examples as reasons why we should be at the table. We should not be an outsider speaking into the very small end of a tube. If it is within the realm of possibilities, our members would be delighted—they are the Washington Natural Gas Company, a solely combined company, Washington Natural, Northwest Natural, Cascade, Intermountain Gas, and C. P. National—to work with you and your colleagues in the Northwest congressional delegation to revisit the act to see whether there is some possibility for broadening the scope to make what we think would be better public policy for the region.

I do not think that it makes much sense for me at this time to talk about the diversity of resources beyond what I have said. I would like to point out that natural gas, by serving nearly 1 million residential customers, takes a significant amount of pressure off of the electric system. If through our incentive programs from the electric side or through our codes developed the natural gas industry is put in a position of losing that load, it is only going to increase electric load. That needs to be explored and examined far more closely.

I would be happy at the appropriate time to answer any questions you have.

Chairman WYDEN. Very good. Thank you. Mr. Wright.

## TESTIMONY OF AL WRIGHT, EXECUTIVE DIRECTOR, PACIFIC NORTHWEST UTILITIES CONFERENCE COMMITTEE

Mr. **Wright**. Thank you, Congressman. For the record my name is Al Wright. I am executive director of the Pacific Northwest Utilities Conference Committee, commonly known as PNUCC.

We are a nonprofit association made up of both public and private electric retail utilities, and we also have membership of the direct service industries which buy electricity directly from Bonneville rather than through a retail utility.

Our utilities and direct service industries are found throughout the four Northwest States of Oregon, Washington, Idaho, and Montana.

One of the roles of our association is to provide the coordination with our member utilities in developing future energy, what the future energy needs are, and what resources are going to be necessary to meet those needs. We do a tremendous amount of work in cooperation with the Northwest Power Planning Council.

As you have already heard today, the region now is, in essence, in load of resource balance, and there is a need to develop new resources to meet future load growth. The good news, I think, is that we are cooperating in the region between the region's utilities, Power Planning Council, and all other entities involved in resource planning better than we have since the passage of the regional act.

I think the advent of the regional electric surplus basically put us all in the marketplace, and that is not a place that encourages cooperation. I think now, with the recognition of the load resource balance situation, we are now back in an environment that does encourage cooperation among electric utilities and Power Planning Council because there is a common need to be able to develop resources to meet load.

I provided you two documents that we have recently produced. One is a composite of the various individual electric resource plans of our individual memberships, as well as the Bonneville Power demonstration. What we attempted to do here is take all these individual resource strategies and plans, put them together, and, in composite, see how they compared to the most recent version that the council is now just in the process of drafting of their energy plan, and see how far apart or how close together the composite utility thinking is with the council's thinking.

The good news is, by and large, the composite utility plans are very close to what the council is thinking about in their draft plan, and maybe even more importantly, the strategies seem to be the same.

Basically, what you will find in that report is that all of the region's utilities are expecting to rely heavily on supply side activities—basically conservation programs—and small, diverse type of resource developments such as cogen purchases outside the Northwest, improvements in the efficiencies of our existing generation systems, and looking at the renewables that are available to us, some small hydroprojects, geothermal, and other renewables as the technologies emerge.

The second part of the strategy is basically the same as the council's, and that is to identify what we call contingency resources—

those things that we need to get ourself in a position to be able to do; not necessarily do, but if we experience load growth beyond what the median load growth indicates, there has to be something you can do to meet that.

Those type of contingency resources are basically the forms of generation you have heard talked about today—combustion turbines to be able to better utilize the nonfirm part of the hydrosystem, and last, the coal and nuclear plant options.

The second document we provided you is basically our perspectives on what the council's draft plan is now and the things we think the council needs to work on as they finalize that plan. Examples are, of course, the continuing discussion of how to deal with environmental consequences, both those that we clearly know about and those that are basically unknown or at least fuzzy, regulatory issues that both public and private utilities are faced with, some of which are counterproductive to the resource acquisition goals.

It all forms a resource confirmation such as the future of the partially completed WMP 1 and 3 nuclear plants and other issues that we think the council needs to address. I thought those two documents might be helpful in giving you a perspective of kind of where we are at this moment in the region on electric resource planning.

We included in our testimony, basically, some things that we think the national effort should focus on—the things we cannot do in this region and things that are impediments to what it is we are trying to do. You have already heard research and development on new energy technologies, including the renewables, clean coal, and some form of socially acceptable nuclear technologies that are the next wave if we are ever going to re-enter our nuclear era.

We think that includes, and particularly important, such things as national standards for efficiencies of appliances, and manufactured homes, and those types of things that are things we cannot deal with on a regional basis, but clearly need to be done to be in conformance with the other things that we are trying to do here.

As you already know, the national nuclear waste disposal site issue just must be resolved. It is a national disgrace, and it puts such things as the Trojan nuclear plant operation, which is now being severely challenged, and it is basically being severely challenged over the waste disposal issue. I do not know what the answer is, but 20 years to develop the answer is just not acceptable.

The other major resource that we know we have available to us, but we are seriously concerned about being able to use, is the available coal. We run some of the cleanest coal plants in the Nation in this region, and in that does not seem to be an acceptable technology at this State.

If we are going to use coal, an attention on the clean coal technologies is essential. It is an issue that we need to be able to confirm—that we can rely on or confirm that we cannot rely on—as a resource.

With that, Congressman, I would entertain any questions. On behalf of my membership, I want to thank you for providing us this opportunity.

[Mr. Wright's attachments to testimony may be found in the appendix.]

Chairman **Wyden**. I thank you, and we will have some questions in just a few minutes.

Mr. Golden.

## TESTIMONY OF K. C. GOLDEN, EXECUTIVE DIRECTOR, NORTHWEST CONSERVATION ACT COALITION

Mr. **Golden**. Thank you, Congressman. For the record, my name is K. C. Golden. I am the executive director of the Northwest Conservation Act Coalition. We are an alliance of over 50 international, national, local, and State environmental groups, rate payer organizations, good Government groups, community action agencies, and public utilities from throughout the Pacific Northwest and British Columbia.

The coalition's function is to promote regional energy policies that fulfill the four-sided mandate of the Northwest Power Planning and Conservation Act of 1980. For the last 10 years, we have been tireless advocates of the energy planning framework that act set out; a framework that has come to be called least-cost planning.

Our goal is to see to it that the region meets its need for energy services at the least total cost to society, including environmental costs.

Let me begin by expressing our appreciation for your recognition that energy issues are really heating up in the Northwest. This is one of the critical public policy challenges that we are going to be facing in the years ahead. I gather by holding this hearing that you are expressing your intention to confront those issues head on, and I think that is real appropriate, and we applaud you for doing that.

Neither in my prepared testimony, nor in the remarks I am about to make, did I address myself very directly to the issue of a national energy strategy, but everything that I say about what is happening in the Pacific Northwest, I think is directly applicable to what is happening on the national level. I think your expressed intent to try to move the national energy strategy in the direction that the Northwest has already moved with the 1980 act and subsequent developments is a good idea.

Conservationists are often accused of being the nay sayers in energy policy circles. Some folks think we tend to come to the table with our beefs and not too much in the way of solutions. I think the Northwest Conservation Act Coalition has spent the last 10 years pretty effectively dispelling that myth.

In 1983, we developed a model energy plan for the region that, in effect, became the working draft for the first regional energy plan under the 1980 act. I think the stakes are significantly higher now than they were in 1983.

For the first time since the passage of the regional act, we are, in fact, eating away at the last of the surplus, and that makes this planning process more than the academic exercise that it has been for the last 10 years. In many ways this is the first moment in the useful life of the act, and so the stakes have risen dramatically in recent years.

That is why, in May of this year, we presented our model action plan—or MAP—to the energy future to the Northwest Power Planning Council. I believe you have copies of that. In it, we outline what we think is a realistic plan for meeting the region's energy needs for the next 20 years using only the high priority resources in the regional act and in the order in which they appear in the regional act—conservation first, renewable resources second, and resources of high-fuel conversion efficiency like cogeneration third.

The cornerstone of that plan is an aggressive conservation acquisition program designed to capture as much as 7,000 megawatts of cost-effective energy efficiency over the next 20 years. You have already talked a little bit about that number and how it winds up relative to other numbers that are coming out regionally.

I just want to emphasize that we do not see our function as defining the left end of the spectrum from which everyone else bargains down. That 7,000 number is not offered as a milepost out on one end and then the region can compromise between that and any other numbers. We offer it because we think it is a realistic number. We think it is an achievable number. It is probably useful to know that it by no means defines the far end of what various people around the country are saying is possible.

EPRI, a power industry research group that is not noted for being a rabid conservation advocate, says now that it is technically feasible to conserve 24 to 44 percent of current electricity consumption. That is above and beyond the 9 percent that is already accounted for in conservation programs that appear as lower utility forecasts.

The Rocky Mountain Institute, as you have already heard today, which is more saying what about conservation but is by no means naive or Pollyannaish. I think they are internationally respected energy efficiency experts. They say that there is a technical potential to save as much as 75 percent of electricity consumption at a cost of about six tenths of a cent per kilowatt hour. That is less than fuel and O&M costs for major thermal plans.

Rocky Mountain Institute, in a recent article written in conjunction with a couple of guys from EPRI in Scientific American, says: "In the past 5 years the potential to save electricity has about doubled, whereas about the average cost of savings of kilowatts has fallen by about two thirds."

Most of the best efficient technologies are less than a year old. You asked earlier, what accounts for the difference between our estimates and the council's? In part, the late-breaking nature of the story is what accounts for it. Many of the council's estimates are based on 1986 data and old model runs. As Rocky Mountain Institute says, this world has been revolutionized within the last 5 years since those model runs were done.

Council staff actually now freely admits that in a number of areas their estimates are low, and that is because they just have not had time to do an up-to-date analysis of it. They hope to do that analysis, probably not before the draft plan is issued for the region, but before the final plan is issued. I think they fully expect to come significantly closer to our numbers.

The same article in Scientific American says that, "Agreement is growing and an astonishing amount of electricity—far more than the 5 to 15 percent cited a few years ago—could be saved in the United States."

Again, that compares to a maximum of 3,200 megawatts identified in this region by the Power Planning Council, which amounts to about 10 to 11 percent of total regional electric loads in the year 2010 or less than a quarter of just the projected growth in demand over the next 20 years.

I think this is an indication that the Pacific Northwest, which was the first region—the path-breaking region—to treat energy conservation as a resource, is now falling way behind the state of the art in energy efficiency.

The amount of conservation that the council has estimated to be available has actually declined since the first plan in 1983, again, while national experts on energy efficiency are saying that it has doubled in the last 5 years. I think this is particularly disturbing because we need the resources now.

Failure to capture conservation in the past was a problem, but it was not a disaster. Now any conservation that we fail to capture is power that we are going to have to get from a more environmentally damaging and more costly source. We will pay dearly in dollars, and fish, and environmental degradation for any conservation that we leave on the cutting room floor now.

The promise of the regional act is that the rate payers of the Pacific Northwest would not have to pay more for resources that the public and the Congress clearly regard as less desirable. In putting out our model action plan, we attempt to sound the cry that the time to deliver on that promise is now.

What should we do about this big gap in estimates? Again, as Angus Duncan rightly pointed out, the tough question is how much can we get, not how much is technically out there. I think we have to start with a realistic assessment of what we can get, but I also think there is a great deal we can do within the foreseeable future to demonstrate the capability to acquire conservation that is not even accounted for in regional supply groups now.

On the subject of renewable generating resources, the past decade has seen astonishing advancements in renewable energy technology, both in the efficiency with which those technologies convert renewable resources into useful energy and with respect to the costs and reliability of those resources.

Already geothermal and some portion of the region's wind capacity is cost competitive on a dollar basis alone with coal and nuclear power. If we account for the relative environmental and social costs of energy resources, the balance tips even further in the direction of renewables. We are confident that if and when the council fulfills its legal mandate to incorporate environmental costs into its resource choices renewables will move right in behind conservation as the region's most desirable generating resources.

A brief word on environmental costs which is not in my prepared testimony; this is a tough subject. How many salmon are megawatts worth, or what is the value of clean air? It is a subject about which we are not going to reach definitive, scientific conclusions any time in the foreseeable future. A lot of good work is being done on the subject, and the work that I see now indicates that the environmental costs of power production may be on a par with its financial costs.

Nevertheless, we are not going to arrive at a lot of certainty, certainly not before the 1990 plan, and maybe not in our lifetimes. What do we do in the face of that uncertainty? The answer is surely not to ignore the problem altogether, which is what we have basically done today.

To give you an example of the kind of thing we can do, the council has recently done an analysis in which it assumes for various reasons that coal or nuclear power plants would be delayed or blocked from construction. In effect, it takes coal and nuclear, sticks them at the bottom of our available resource options, and says what can we expect to pay in dollars for assuming that coal and nuclear are the resources of last resort and pushing them to the bottom of the stock.

The answer they come up with, and it is an answer we would argue with, but I do not think we need to argue with, is that it would cost $100 million over the next 20 years. That is ²⁄₁₀ of 1 percent of the projected regional expenditure under a high load scenario.

We can have a $50-billion plan with a significant likelihood of having coal and nuclear plants in the next 20 years, or a $50,100,000,000 plan with a significantly lower probability of having nuclear and coal plants over the next 20 years. Yet, we still call the $50-billion plan the least-cost strategy.

To me, that is an indication that we are still failing to take environmental costs seriously. I guess my pitch is that we take questions like this out to the public and say OK, maybe we do not know what the environmental costs of coal and nuclear are, but is it worth it to you to pay .2 percent more over the next 20 years to significantly reduce the likelihood of seeing coal and nuclear plants.

That is the kind of question we can answer, and we can answer it now. It is the only kind of question we have to answer in order to make the right decisions in this planning cycle.

I would also say that beyond generating resources for electricity and what is now becoming more and more commonplace as a conservation resource is there are a whole set of new horizons that we ought to be looking at to meet regional demand for energy services. You will see sections on those in the model action plan.

Briefly, we propose a number of other new approaches, and I think maybe the most promising is water use efficiency. The MAP would have the region explore the vast potential for generating more hydropower and improving fish flows incidentally by leaving more water in the river.

The Water Conservation Steering Committee created for the preparation of the Columbia basin expansion, EIS explains, "Approximately 90 percent of all the water consumed in the Western States is used by irrigated agriculture." Any conservation, even just a few percent, would dramatically increase the water supplies available to those water users sharing the other 10 percent.

I want to emphasize that what we are talking about here is not stealing anybody's water, but voluntary transactions in water rights that improve the efficiency of water use and hence, the efficiency of energy use.

Another promising option is to purchase conservation from our neighbors in British Columbia who have already expressed a great deal of interest in that proposition. This could help us rather than exporting the adverse environmental effects of energy production to promote international cooperation based on exchanges of clean, affordable energy resources rather than generating resources.

Finally, you have heard some of the arguments for considering natural gas and direct application as a resource. I would only underline what you have heard earlier today, which is that we should choose between direct application of natural gas and electric generating resources, including natural gas, based not on how they effect the market shares of gas and electric utilities, but based on their total cost to society.

If we make that choice, and if it has adverse financial consequences for utilities, then we need to take that into account and do whatever bookkeeping and compensation seems appropriate.

The public policy choice is clear. You do it on the basis of least total cost.

NCAC has an associate member category in which we have both gas utilities and electric utilities and actually mixed fuel utilities, too. We hope to engage these companies in a dialogue that would result in the creation of a responsible code for competition between gas and electricity. We are perfectly prepared to encourage aggressive competition based on who can provide energy services at the least total cost. I think that is the kind of competition we can all benefit from.

I would say briefly on the subject of firming our nonfirm, which you have heard a fair bit about already this morning, firming nonfirm is a big idea.

Combustion turbines are one prospect for implementing that idea. There are a number of other prospects, including buying agricultural water rights or leasing them in dry years, increased interruptability for certain customers. There are lots of ways to go about getting it and firming nonfirm.

CT's may prove to be a logical and efficient way, but I would emphasize that, in contrast to what you heard a moment ago, use of natural gas in any form of combustion is not environmentally benign. It is better than many generating alternatives, but it still produces carbon dioxide. It still releases methane to the environment, and it is a source of concern.

To sum up, as we suggest in the model action plan, more efficient use of energy, and water, and renewable resources are the keys to a clean, affordable energy future.

In the next few years—indeed, in the next few months—the vision that Congress and the region forged in the 1980 regional act, which is the vision of energy efficiency and clean, renewable generating resources, will be put to the ultimate test. I think that passing that test is going to require the sustained commitment and cooperation of the region's policymakers and the energy community in general.

I would like to thank you for the opportunity to testify on these issues, and I would be happy to entertain any questions.

Chairman WYDEN. Thank you. Well said, and I can tell you as I was listening to your testimony, you hit the point about the question of environmental considerations and various energy sources that we spent a good chunk of our waking hours over the last month talking about in the Clean Air Conference Committee. I am hearing it at home, and I am hearing it at Washington, DC, and around the conference table as well.

Let me ask the panel a couple of questions generally, and then maybe some specifics for each of you.

Do any of you foresee construction of big, new generation facilities in the Northwest in the next 20 years? We will start with you, Mr. Yockim.

Mr. YOCKIM. Well, I guess it is my hope that we will not, because I think the small power producers have the ability to bring on small incremental sources.

I guess another reason I do not think we will is I think we are going to see a major reduction in the power loads relative to saw mills in the not too distant future over the next 5 years. We are seeing more and more saw mills shut down. The ones that are left are going to be more efficient energy-wise, so I think there will be less of an energy demand, probably to the magnitude of 50 to 100 megawatts. It could be in that area.

If you combine that with some of the small power producers coming on line, I think you will see that we can push the major facility construction out maybe 10 years. I do not know about 20 years, but maybe 10 years.

Chairman WYDEN. Mr. Jones, do you see big plans coming?

Mr. JONES. I do not see big plans coming. I think that probably the need for continuing to seek diversity in our regional system is well embedded in the planning process in the minds of most of the people who are going to drive that.

If, in fact, we lose Trojan, for example, there is going to be a rather large piece lost. We would be forced, in fact, to elect a boardman kind of facility. If we are forced to that kind of thing, I hope that we will take a look at new, clean coal technologies because a great deal of this happened in preventing the environmental degradation that we do not want to have out of the large central station plants.

But, no; I do not see that immediately happening.

Chairman WYDEN. Mr. Wright.

Mr. WRIGHT. From the utilities' perspective, basically, the answer is we hope we do not have to build any centralized plants. Contrary to popular opinion, that is not an attractive option in the utility industry. It is high capital, and it is high risk.

Many of the utilities have not been able to deal with risk very well with regulatory impediments, so we hope that we can be successful in getting through the next two decades without having to build any centralized plants.

However, we are concerned about being ready to do it if we do have to build them, so we are real concerned about our abilities to put a plant on line if the need arose.

Chairman WYDEN. Mr. Golden.

Mr. GOLDEN. I am not a forecaster. I am an advocate of the public interest, and I will say that in doing that advocacy it has been very clear to me that it is not in this region's interest to have development of those plants over the last 20 years. We have tried it within the memorable past, and we paid through the nose for it, frankly. I do not think people are anxious to repeat that experience.

I am very encouraged to hear Al Wright say they do not want it either, and they are going to do what they can to avoid it. I am somewhat surprised, frankly, with a utility community saying that the Northwest Power Planning Council at this point is still actively considering plants 1 and 3 and options on old plants.

I do not hear the utility community stepping up to the line to make those investments, and I think the important thing is not to predict whether it is going to happen, but to recognize that we have it in our power with decisions that are going to happen in the foreseeable future to make it not happen. The point is to go out there and make those decisions.

Chairman WYDEN. A couple of questions for you, Mr. Wright, on this bomb shell issue of the utility rates being tied to conservation.

I have to tell you, I am attracted to this idea that New York is looking at, and I gather that it is workable. They have spent a tremendous amount of time on it, and it is awfully complicated and the like, but it really turns the traditional system on its head, because it locks in a bottom line financial reward for everybody—the utility and the customer—in terms of pricing that way.

I would be interested in your thoughts on it, from the standpoint of both Oregon, because in Oregon it becomes a PC issue essentially, and in terms of its applicability in terms of a national energy strategy.

Mr. WRIGHT. Well, I think one thing, I want to qualify my answer. We do not get involved in rate structures, and I am a long ways from being a rate expert, but I think all of the utilities in the Northwest would agree that the system we have now—the way we sell electricity and the way the profit margins are calculated—is a disincentive to conservation. I have never heard a utility argue that point at all.

One, I think we would agree that something has to be done there if we are going to encourage the wise use of our existing electrical resources.

The other answer, I guess, that I have heard our people say is you have to maintain tremendous flexibility because everybody's condition is different. What PP&L might be able to do here in downtown Portland is most certainly different than an Idaho co-op in Burly can do, for instance, and even different than what Pacific Power can do in a small coastal community that it serves, as well as it serves in Portland.

So, I think flexibility and diversity of giving the consumer and the retail electrical utility the chance to work it out amongst themselves is really important, but clearly something has to be done if we want to encourage wise use.

One of the things that we stress very, very firmly, and we think that the last 8 years have shown fairly intensive conservation interest on the utilities' part, is the educational aspect, as Mr. Jones pointed out. I think that is essential in getting people to understand that it is their own self-interest.

It is not an ethic. It is not a moral issue. It is an economic issue, and if they want to keep their rates low, then conservation is something that is in their interest. We do not have to send a price signal necessarily by raising rates.

We have to send the message to people that low electric rates are an integral part of the Northwest economy, and, if you want to keep that Northwest economy, you must keep those rates low and conservation has to be an integral part of that activity.

Chairman WYDEN. I think that is a thoughtful answer, and I very much share your view that what works for PP&L in downtown Portland does not necessarily work for a little co-op in Idaho.

The same is true in health care. I have tried to specialize over the years. Anybody who thinks a national health insurance plan which works in the Bronx will also work in Gresham, Oregon, or any rural community is just talking nonsense.

The question is, can we build on the concepts? I think we will want to follow this up with you because I think it is an attractive concept. Properly done with the flexibility, it is going to take a lot of effort, both from a regional standpoint, if we look at it, and from a national standpoint.

I like the aura of this because locking in financial incentives on both sides of the equation—the companies and the consumers—is sure a way to send a strong message.

May I ask you about the natural gas issue and your thoughts on that as well? Particularly, this question that we are debating of how you integrate natural gas without, in effect, giving anyone an advantage—I think you heard me and Mr. Duncan talk at some length on this.

The idea is not to have you and Mr. Jones about to strangle each other and ruin each other's weekend fighting for your turf, but the idea is to have an energy policy that, in effect, identifies the most efficient possible choices, and lays them out for people.

How would you suggest that something like this might be done, integrating natural gas, and doing it in a way that does not get the Federal Government in the business of dictating preferences and mandating choices?

Mr. WRIGHT. I think what you heard from Mr. Duncan is probably the correct answer. We will never get anywhere if we deal with concepts like fuel switching. That puts Mr. Jones and me at odds immediately because our members are in the marketplace. They are competitive and should be competitive. There is nothing unhealthy about that.

There is a separable issue, and that is wisest use of our resources. We have to get to that concept and that discussion at a table before you can get this issue resolved.

Hot water heat, for instance, if we happen to have a piece of the marketplace, it is a very attractive load for us. It is flat; it is 24 hours a day; it is the type of load that helps back up management of resources. From that point of view, we might argue that is a very wise use of electric resources.

The argument has to be what is the wisest use of the resources, and the efficiency is a major component of that, not just price. The worst strategies we can ever develop in energy management between natural gas, and electricity, or anything else is if we deal with the immediate price of any one of the commodities.

There was a time in this region when electricity was far cheaper than natural gas, and if we had used that criteria we would have made a lot of decisions, which we did, that may not be the most efficient use of a particular resource. I think the worst thing we can do is take too much emphasis on what the immediate price of any one of the commodities is.

Chairman **Wyden**. You and also Mr. Jones, I think, touched on this, and I want to make sure I understand whether or not there are any discussions going on.

Both of you have referred to being at the table. I kind of have this conception that there is this table somewhere, and both of you would like to get to this table and talk about it.

When I talked to Ms. Hickey about this issue, I got the impression that there were discussions between electrics and natural gas and that people were sort of at this table—this mythical table—now.

Is that true? Are there discussions going on with Bonneville and your two groups to address some of these questions of interrelationship between electricity and natural gas, or is the absence of these discussions what you are talking about?

Mr. **Wright**. There is from PNUCC's perspective—we are having some limited discussions with the natural gas representatives—very specific technical discussions regarding, for instance, gas supplies to the CT issue and those types of things.

I guess I would agree with Mr. Jones that this is nowhere near the level of discussions on an integrated planning basis that really are necessary. For the next 20 years, natural gas is going to be a major energy component of the electrical industry, one way or the other, or both probably.

There is a need, I think, to integrate that discussion far beyond what the feeble efforts have been that we have tried on our own here today.

Mr. **Jones**. I guess I would add that it seems to us from our side of the discussions that we are all smarter together than we are separately. We all have information resources to bring to whatever table is there. We would like not to have to fight to get in the door because we do not own the table. The electric industry owns the table. That is clearly the case.

Chairman **Wyden**. Mr. Wright——

Mr. **Wright**. We would show you the table.

Chairman **Wyden**. We have had such harmony here that I do not want to let you go and get into the ownership of the table debate.

I very much like the idea of getting you all there and working on this in the kind of cooperative fashion that I think you are talking about. I am going to pursue that.

One question for you, Mr. Jones. I was going to touch on the table matter with you, as well, but I think we have covered that.

What about the question of stability of natural gas prices? Last winter they had the cold snap, and the staff reports that the spot price of natural gas mirrored pretty much the heating oil rises. Are you all confident that there will be the kind of stability in natural gas prices that the consumers are going to want to have?

Mr. JONES. Let me say that Mr. Wright and I, in fact, agree on many things. The crystal ball that we would like to have with regard to that particular important item is not as clear as we would like it. It is probably a granite ball.

I would like to point out, however, that the oscillations which were tied in earlier periods almost directly to the price of petroleum no longer exist. Witness the run up of petroleum prices and a very stable pricing of natural gas. There has been very little fluctuation.

Chairman WYDEN. Here at the last?

Mr. JONES. That is correct. We think that the answer then may be in part revealing the separateness even to the fact that exploration and drilling for natural gas today is done for its sake rather than petroleum and as a secondary consequence of that effort.

Chairman WYDEN. I understand the point you are making. I am not sure it is completely comparable because this was not cold weather time, but I think that is clearly what the policymakers are going to be looking at. It is a question of stability. I understand your point.

A question for you, Mr. Yockim. In terms of financing the improvements, the kinds of things you are talking about are the schools, hospitals, and factories. Are the environmental and energy benefits such that Bonneville or some of the other agencies would subsidize these upgrades in order to get out the cogeneration potential?

Mr. YOCKIM. I think, in reviewing some of the data that Bonneville has put out in the past, they are examining that option of Bonneville or the Government in some form being involved and paying for that.

When you look at most of these large institutions—the University of Oregon Medical Center—when you look at the University of Oregon, per se, or even the hospitals, they are quite large facilities. Those that are funded by Government funds I would expect, either through their own funding sources or through something like Bonneville, that they would be funded that way.

When it comes to something that is a private enterprise, I am a die hard fan of the private enterprise system, and I would expect the private enterprise to be paying for those type of improvements.

In our cases, with fixing up our dry kilns and that sort of thing, those made good economic sense for us. We did not look for anyone else to assist us in that.

Chairman WYDEN. How is D. R. Johnson Lumber generating the power and then going forward with utilizing it and selling it?

Mr. YOCKIM. We have two facilities; one at Prairie City and one at Riddle. They are both seven and a half megawatt name plate facilities. We are taking our hog fuel that is generated just from our one saw mill over at Prairie City—actually, it is a two-saw-mill complex—and we are producing about eight megawatts. We use about 200 to 300 kilowatts in that facility. The rest is sold to the local co-op.

A quirk in our contracts requires us to sell it all back to the utility. As to why that happened, it was one of those things we could not negotiate.

Where we probably get our best savings then is we can use the steam that comes out in our dry kilns. Because of the ability to cogenerate, we have actually doubled our dry kiln capabilities. That is that value-added item that we also like to look at in the wood products industry—how to add more value.

Chairman WYDEN. One other question for you, Mr. Yockim. Contractors can generally burn wood waste with far less pollution than if the waste is burned in the open. Logging slash, field stubble, and other wastes often get burned in the field, causing smoke, but not capturing, as I understand it, that much energy.

Do you think these fuels are going to be used by the cogenerators more commonly in the future?

Mr. YOCKIM. If you had asked me that question a year ago, I would have said there are great opportunities, but the cost is prohibitive.

Now, with what we are seeing in the hog fuel prices moving up, we are fast getting to the point where we can afford to bring that material out of the woods and run it through these cogen plants.

There is another fuel source that is out there, and it is rather unfortunate, but we have massive acres of insect killed trees in eastern Oregon that I think we are reaching the point where it might be worthwhile to bring those in, debark them, make chips and then generate a lot more hog fuel. I think there are some things that can be tied in there.

Chairman WYDEN. Where is your home?

Mr. YOCKIM. I am down in Roseburg—just south of Roseburg. Our company has mills over in John Day and Prairie City.

Chairman WYDEN. You have a lot of very innovative ideas, and you were very helpful.

One question for you, Mr. Golden, and maybe we have already touched on it. How are things going in terms of your negotiations with the power council? I think Mr. Duncan was quite complimentary of how he evaluated your long-term plan, but why do you not just amplify it on the record?

Mr. GOLDEN. I think substantively we are moving closer. There are still a number of outstanding issues that I think need to be addressed, primarily regarding the future of thermal resources and the whole environmental cost issue. There are some others, but I think we are moving in the right direction. I think the council's draft has a lot of the elements of our plan that we would like to see in theirs.

One subject on which there has been a little bit of tension is the whole question of the level of public deliberation around this planning process. The kinds of things that the council is considering right now are not immediately transparent to your average member of the public. Even members of public interest groups who do not focus specifically on energy find the whole process a little bewildering. That, in large part, comes with the territory, and it is just an issue we have to deal with.

I, frankly, have been disappointed in the level of public involvement in this planning process. We are now working with the council to try to figure out ways that we can increase the public access to and public understanding of these issues because I think, especially on issues like environmental costs, if the council is duly aware of how the public feels about these issues and how public values would dictate their response to the issue of environmental costs, I think they are more likely to move aggressively on those issues.

Mr. **Wyden**. Part of the reason that we wanted to have this hearing, and it has been hectic because there are not going to be many free Saturdays or free time between now and the time Congress adjourns, was just to promote the kind of matter you are talking about, which is public discussion and public awareness.

You have given me a number of good areas to follow up on. I am very appreciative of the chance to take 3 hours or so out and get your input on some important issues on which we can follow up.

I think it is helpful. It gives me a chance to look at how I can work to make the Federal Government a better partner and kinds of things that you are doing. We will be in touch in the days ahead.

Unless there is anything you would like to add, we will excuse you at this time.

[Whereupon, at 12:30 p.m., the subcommittee was adjourned, subject to the call of the Chair.]

# APPENDIX

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STATEMENT

RON WYDEN, CHAIRMAN

HOUSE SMALL BUSINESS COMMITTEE
SUBCOMMITTEE ON REGULATION, BUSINESS OPPORTUNITIES AND ENERGY

PORTLAND CITY COUNCIL CHAMBERS
PORTLAND, OREGON

SEPTEMBER 15, 1990

The Committee is convened today to examine recent events that have created uncertainty in the energy future of the United States and, specifically, here in the Northwest.

The Committee will also review the testimony of the expert witnesses assembled here today to develop a set of recommendations that can serve as a "Northwest strategy" to a national energy policy that must be developed.

As chairman of this subcommittee and as a member of the House Energy and Commerce Committee, I have joined with many of my colleagues over the last decade to try to forge a national energy policy. We have wanted a policy that gives priority to conservation and efficiency, and a policy that has a specific goal of reducing American dependence upon oil in general and foreign oil in particular.

Yet we have run into a brickwall of resistance at the Administration level. Since the early days of the Reagan Administration, energy policy in the nation's capital has consisted of little more than letting oil companies charge whatever they want. And the only real leadership we've seen at the Administration level has been in rolling back the few conservation incentives we used to have in place. Let's look at the record:

- Since 1983, U.S. energy consumption has increased by 16%.
- Our dependence upon foreign oil has risen from approximately 30% at the beginning of the last decade to approximately 40% in 1989.
- Petroleum is used more than any other energy source in the United States.
- Instead of increasing automobile and appliance efficiency standards, the Reagan Administration advocated rolling them back -- and even went so far as to halt federal distribution of a pamphlet for auto buyers that compared fuel economies in various cars.

- At the Department of Energy, two-thirds of its budget goes to defense-related programs, with only one-fifth devoted to energy research and development. And of that one-fifth, 28% in FY 1990 is going to nuclear fission and fusion, 27 percent to fossil energy, and only 9 percent to renewable energy and conservation -- the areas with the greatest potential for maximizing economic growth while minimizing environmental damage.

We now find ourselves reaping the harvest of this decade of retreat. The Persian Gulf crisis has been the wake-up call that we all knew would come sooner or later. And the message of this wake-up call has been very clear: Mr. President, you aren't even close to having an energy policy.

Moreover, the Bush Administration response to this current oil crisis has been woefully inadequate. Essentially it has consisted of a voluntary call for conservation -- a call that rang hollow with many Americans because the President made it while plying the waters of the Atlantic in one of the biggest gas guzzling boats around.

The Administration has offered several helpful hints, such as increasing the air pressure in our car tires to get better gas mileage, but these hints are not the makings of the energy policy the country so vitally needs.

I am also concerned about what I see as the breakdown of the planning efforts to develop an energy policy that are underway at the Department of Energy. At a time when it is necessary to ask tough questions of our energy policy and to make difficult decisions regarding conservation, the development of alternative energy sources and the improvement of domestic production capacities, I question whether DOE's energy planning process actually reflects current world conditions.

Because of that concern, yesterday I requested the General Accounting Office conduct a study of of the methodology and procedures used by the DOE in its energy planning process.

Closer to home, new and competing uses for Columbia River water, and increased demand for power resulting from a strong economy and unprecedented population growth have created a new uncertainty for the Northwest's energy future. And sure as night follows day, an uncertain energy future means an uncertain economic future for our region.

There are steps that can be taken, however, both nationally and locally, to put us on a more solid energy footing.

First, I believe we should take the concepts of the Northwest Power Act and, where applicable, apply them on a national scale. The Northwest Power Act calls for conservation to be considered as a resource, just like coal or nuclear power, and puts it at the top of the list in meeting our energy needs. We should apply that concept nationally.

The Northwest Power Act also puts in place a long term planning process that maps the energy needs of our region with the least cost available resources. We should apply that concept nationally as well.

Yet beyond the Northwest Power Act, there are strategies we must examine that will reduce energy demand and encourage conservation both here in the Northwest and nationwide. These include:

o Basing utility rates of return not on the volume of power sold, but on the volume of power conserved. Most rate agreements are based on the principle of the more energy sold, the greater the earnings. If earnings were tied to the amount of energy conserved, rather than the total amount of energy sold, we would have a marketplace incentive for utilities to increase their investments in conservation.

o Computing costs of a resource that now are mostly ignored -- such as environmental degradation costs -- into the total costs of that resource. One of the reasons many renewable energy sources, such as solar power and wind power, have been so slow to develop is that, up front, their costs are much higher than those associated with traditional energy sources. But if the costs of permanent nuclear waste storage are more acurately reflected in nuclear generated power, and if the environmental degradation caused by high sulfur coal is more acurately relected in coal generated power, then renewable energy costs will be much more in the ballpark.

o Establishing strong efficiency standards for household appliances, furnaces, waterheaters, and lighting, as well as for industrial processes. We need to reward those that utilize these high efficiency items, and we should penalize those that don't. Again, we need to put in place some marketplace incentives that can help us achieve national energy policy goals.

o Establishing incentives to encourage the development of alternative fuels, such as methenol, ethenol and natural gas, and to encourage the conversion of cars that can utilize these fuels.

I am happy to report that we are already making progress on this last item through provisions included in the Clean Air Act, which has passed both the House and the Senate and where differences between the two bills are being ironed out in a conference committee. I am a member of that conference and expect the final version we send to the President to have a strong alternative fuels provision.

Ironically, had the eighties not been the "lost decade" in terms of energy policy, we might be in the position of not needing to rely on oil from Kuwait, Iraq or even Saudi Arabia. And absent that reliance, the massive U.S. troop build-up in the Persian Gulf might not have been necessary.

The point of all of this is that, nationally, we're not prepared to deal with disruptions in our energy supply. We have no roadmap. Within our region, we have a roadmap -- the Northwest Conservation Act -- but we still face many stiff challenges and tough choices in charting our energy future.

I hope this hearing today can help us learn more about the options we have before us regionally, and what aspects of our "Northwest Strategy" can we integrate into a long overdue national energy policy.

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# STATEMENT OF

## DAVID V. YADEN, DIRECTOR
## OREGON DEPARTMENT OF ENERGY

BEFORE THE

## SMALL BUSINESS SUBCOMMITTEE ON REGULATION, BUSINESS OPPORTUNITIES, AND ENERGY

## U.S. HOUSE OF REPRESENTATIVES

FIELD HEARING
PORTLAND, OREGON
SEPTEMBER, 15, 1990

Congressman Wyden, ladies and gentlemen. I am Dave Yaden, Director of the Oregon Department of Energy. I appreciate this opportunity to offer Oregon's perspective on this nation's energy agenda: Where we are and how we got here, and where we need to go.

Some of what I will say here today will win me no points in a popularity contest. There are some hard truths about energy that most Americans have never fully faced -- and they must. The only question is when. Shall we face and address these tough questions now -- or shall we put them off on our children and grandchildren? Some of us are at an age at which we know how it feels to have one generation forward its unpaid bills to the next.

I'm going to say that this nation has not learned how to sate its appetite for oil. I'm going to say that one reason for that is that the price of oil -- and all energy -- is too low. Higher energy taxes and penalties for wasting energy are in order.

I'm going to say that we need to rethink our attitudes about short term pain and long term gain. Until we're willing to spend a little more upfront to build in long-term efficiency in our homes, factories, and equipment, we'll continue to forfeit ready opportunities to stop energy waste.

I'm going to say that if you decide to drive a gas guzzler car, the Federal government should whack you with a big tax -- but reward you if you drive a fuel-efficient car.

I'm going to say that Congress had better look again at one of the best cost-to-benefit investments it ever made or ever will make: helping Americans save energy. Programs that achieved remarkable results in the decade 1975 to 1985 should be put to work again.

If we've learned anything at all over the past 20 years, it should be to recognize that fleeting window of opportunity for key decisions. This is one of those times. We are at an energy crossroad.

In 1986, the Northwest had a power surplus of about 2,500 average megawatts. To give you an idea of the size of that surplus, that is about how much power all Oregon businesses used that year.

Today, energy surpluses -- here and elsewhere -- have dwindled to next to nothing. We need new supply.

From 1977 through 1985, our reliance on oil imports plummeted. In 1986, after we started to use oil more efficiently, crude prices halved. Prices at the pumps dropped 15 percent in one year. Counting inflation, we paid less per gallon than we paid before the 1973-1974 oil crisis.

Today, after getting hooked on imported oil again, we're scrambling to assure adequate supplies for the winter heating season. There has to be a better way!

When it comes to petroleum consumption, this nation's behavior has all the earmarks of addiction. We started to use oil more efficiently in 1986. We could have maintained our momentum -- but we didn't.

The lesson we should learn from the Iraq invasion is this: we're no less vulnerable to rapid oil price hikes and supply cut-offs than we were ten years ago. For a state that spends half of its energy bill on imported oil -- some two billion dollars -- that's a hard lesson.

Last, we've entered what the Economist magazine dubbed "the green decade." Today, virtually every major energy decision facing the state and nation is also an environmental and health decision. Our energy choices are going to become harder to make to balance energy, public health and safety, and environment goals.

Energy efficiency -- that is, saved energy, must be the foundation of our strategy to meet these energy management challenges of the 1990s. Otherwise, we cannot achieve our goal of reliable, affordable and safe supplies.

We win twice by saving energy. First, saved energy is the cleanest, cheapest, and safest way to meet future demand and keep Oregon's high quality of life. Second, energy efficiency helps boost our economy by lowering energy bills and keeping energy dollars from flowing outside our borders.

Oregon and the Northwest have chosen energy conservation as the number one resource to meet energy needs. Our plans reflect that commitment to energy conservation.

However, while our efficiency-first policy has served us well, there remains much conservation to be tapped in this region and the nation.

Here is the energy efficiency agenda that makes sense today:

1. Get prices and incentives right -- particularly for oil -- both to account for environmental costs and to cushion future price shocks.

   - I don't want to be a Jeremiah about global warming, price run-ups, imminent gasoline lines, or rolling brownouts. But the prices we pay for energy simply don't reflect the costs imposed on the environment and public health and safety. Nor does the market price of oil reflect costs to the economy in terms of national security -- such as troops in Saudi Arabia.

   - The price of all energy is too low. As a result, we use too much energy, we waste too much energy.

Frankly, Americans don't want to hear that. We abhor short-term pain, long-term gain policies. Part of the American lifestyle has been to mortgage the future to finance the present. Sometime, somehow, someway, we must choose the option of paying now rather than paying later.

At the federal level we should:

1. Have a serious debate about a federal carbon tax for all fossil fuels in proportion to each fuel's contribution to C02.

   I know there are a lot of political leaders, energy utilities, coal producers, automakers, and a handful of others who hate this policy.

   But, I believe it is a "no-regrets" policy and a needed ingredient for getting energy prices right.

   Energy planners have learned the hard way -- they cannot accurately predict energy events. So our strategies must emphasize flexibility and risk-management.

Global warming, and the continued burning of fossil fuels, poses unprecedented risk. I believe the right risk-management principle here is: when in doubt, side with efficiency and improved environmental quality. A carbon tax is one way to do that. There may be other ways to accomplish the same goal, including a tax combined with an overall limit or cap on CO2 emissions.

2. Increases taxes on transportation fuels.

State and federal gasoline and diesel taxes -- which for the most part raise money to pay for road construction and repair -- are insufficient to pay for all highway costs much less to signal consumers the true cost of the resource.

Other countries tax fuels to reduce consumption. For example: Japan, European countries, Brazil and others price gasoline at two to four times U.S. levels.

We should increase transportation fuel taxes, stagger them by year, and use extra funds for low-income weatherization, other conservation investments, mass transit funding, alternative fuels, etc.

In fact, an ad valorem tax on all energy would be perfectly acceptable.

3. Build more efficient new homes, buildings, appliances, vehicles and factory stock.

   - Our housing, building, vehicle and factory stock largely determines how much energy we use and how efficiently we use it. The automobiles we drive, the appliances we operate, the building design and materials we use, the manufacturing processes and equipment we install -- are long-term choices too often guided by short-term price outlook. When efficiency isn't built into our capital stock, we lose vast opportunities to improve our energy productivity for the life of the new stock.

States cannot effect the necessary changes. Congress must step up to the challenge and responsibility.

1. Toughen CAFE standards and the Federal Gas-Guzzler Tax; establish a "Gas-Sipper" rebate.

- Along with raising the gasoline tax, the most effective means to reduce oil use is to improve car and truck fuel economy.

- A complementary set of policies is required to push and pull the market to improve fuel economy.

- The current federal fuel efficiency standards -- 27.5 for cars; 20.2 for light trucks (a large part of Oregon's new car market) are too low.

- Gas-Guzzler/Gas Sipper. Incentives are needed both to discourage production of inefficient cars and trucks and to encourage the production of highly efficient vehicles.

  The current gas guzzler tax enacted in 1978 affects only the most inefficient luxury cars. Congress should change the law to increase the tax and to apply it to less efficient vehicles.

2. Toughen building standards for manufactured homes.

The U.S. Housing & Urban Development energy standards for manufactured homes -- a major part of Oregon's new home market -- are woeful. A unit built to HUD standards uses more than twice as much electricity as a unit built to the Northwest Planning Council's Model Conservation Standards.

HUD's required review is dragging. The proposed standards may fall well short of what is cost-effective to Oregon and Northwest homebuyers.

It's hard to imagine that HUD lies awake at night worrying that Congress might demand action. So far, Congress has been satisfied with HUD's "the check is in the mail" response. With all due respect, HUD is stonewalling you and you're letting them get away with it.

Toughen appliance efficiency standards. The USDOE has made a good start by improving standards for refrigerators and freezers. But they must continue to strengthen the standards for water heaters and other appliances.

Require that all new and renovated federal buildings include all cost-effective efficiency measures. Government must be a model of energy-efficiency. There is much cost-effective conservation beyond that specified in building codes. Oregon law requires new state buildings to incorporate all cost-effective savings.

3. Improve energy-efficiency in existing homes, buildings, and factories.

   - Effective timely conservation reduces the need for more expensive new supply. And it cuts costs for households, businesses, and governments.

   - In the future, it's simply going to be harder to get these blocks of saved energy. And it's going to take time.

It entails moving beyond the easy conservation investments for Oregonians, tapping conservation in sectors where success has been elusive, and testing programs that will plow new ground. The battle for savings will be from hedgerow to hedgerow, building to building.

- Reinstating Federal funding to attain greater levels of energy efficiency is a must if we are to penetrate the areas of need effectively.

  Increase funding to weatherize the homes of low-income families. Congress cut low-income weatherization funds. Oregon made up for this cut with oil overcharge funds. But those funds are dwindling.

  Continue funding local and state assistance programs. State and local governments have been effective deliverers of federal programs. For example, just $48,366 in federal funds allow Oregon to administer its $40 million a year business energy tax credit program. That program alone has helped Oregon businesses save energy worth $60 million a year.

Redirect USDOE R&D monies. The current USDOE R&D budget always has been and continues to be nuclear top-heavy. That's saying it nicely. We must move more money into conservation and renewable resource research.

In closing, it seems to me that circumstances have somehow been arranged for us to have one more chance to get smart about the way we use energy. Whether we take advantage of the opportunity remains to be seen.

Thank you.

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# STATEMENT OF SUE F. HICKEY

BONNEVILLE POWER ADMINISTRATION
UNITED STATES DEPARTMENT OF ENERGY

BEFORE THE HOUSE SMALL BUSINESS SUBCOMMITTEE ON REGULATION, BUSINESS OPPORTUNITIES, AND ENERGY

SEPTEMBER 15, 1990
PORTLAND, OREGON

## INTRODUCTION

Congressman Wyden, my name is Sue Hickey and I am the Assistant Administrator for the Office of Energy Resources at Bonneville Power Administration (BPA). I appeciate the opportunity to appear before you today to discuss the Northwest's energy future.

As the events of the last few months remind us, the energy business is uncertain. However, the Pacific Northwest has had a decade of advantage as a result of the Pacific Northwest Electric Power Planning and Conservation Act of 1980 (Regional Act). The Regional Act provided a structure for electric utility planning. It created the Northwest Power Planning Council (Council) and emphasized the development of conservation. The Council is now developing a new Power Plan--its third since the Council was formed.

The Bonneville Power Administration (BPA) responds to the Council's guidance through a biennial Resource Program, which focuses on implementation of the Council's Plan. This regular review and focused debate of future needs and resource choices provides a broad understanding of the Northwest energy situation. It also serves as a mechanism for developing consensus on proposed actions.

## BPA IS IN LOAD/RESOURCE BALANCE

The electricity surplus, which existed just a few years ago, has diminished. Healthy economic growth in our region over the last several years has absorbed the surplus. However, BPA is well positioned to meet its power demands.

## CONSERVATION AND OTHER RESOURCE OPPORTUNITIES CAN MEET BPA'S NEEDS

BPA and the Northwest have an opportunity to meet future power needs through a variety of resources. Conservation is the cornerstone of BPA's planned effort. We foresee the ability to meet approximately 750 average megawatts (aMW) of energy demands through conservation over the next 20 years. The conservation potential for the entire Pacific Northwest region is even larger.

Additional opportunities in small hydro, cogeneration, hydro efficiency improvements, and transmission system improvements can provide another 600 aMW over the next 20 years. Geothermal, wind, solar, and other technologies also have promise. These resource opportunities, if we take full advantage of them, have the potential to meet our power needs cost-effectively, with minimal environmental impact, for the remainder of this century and beyond.

## BPA HAS A NEAR-TERM RESOURCE PROGRAM

BPA recently completed the 1990 Resource Program--our seventh since the first in 1982. The 1990 Resource Program identifies near-term actions aimed at meeting BPA's long-term needs over a 20-year horizon. The 1990 Program specifies actions BPA may take to develop nearly 600 aMW of conservation and other resources to meet medium-high demand through 1997. These actions might include:

- Developing 300 aMW of conservation through a variety of approaches.
- Developing another 50 aMW of conservation and generation resources through billing credits.

- Developing another 100 aMW of conservation and generation resources through competitive bidding.
- Acquiring 100 aMW through hydro system efficiency improvements.
- Acquiring 30 aMW of output from geothermal resources through a pilot program.

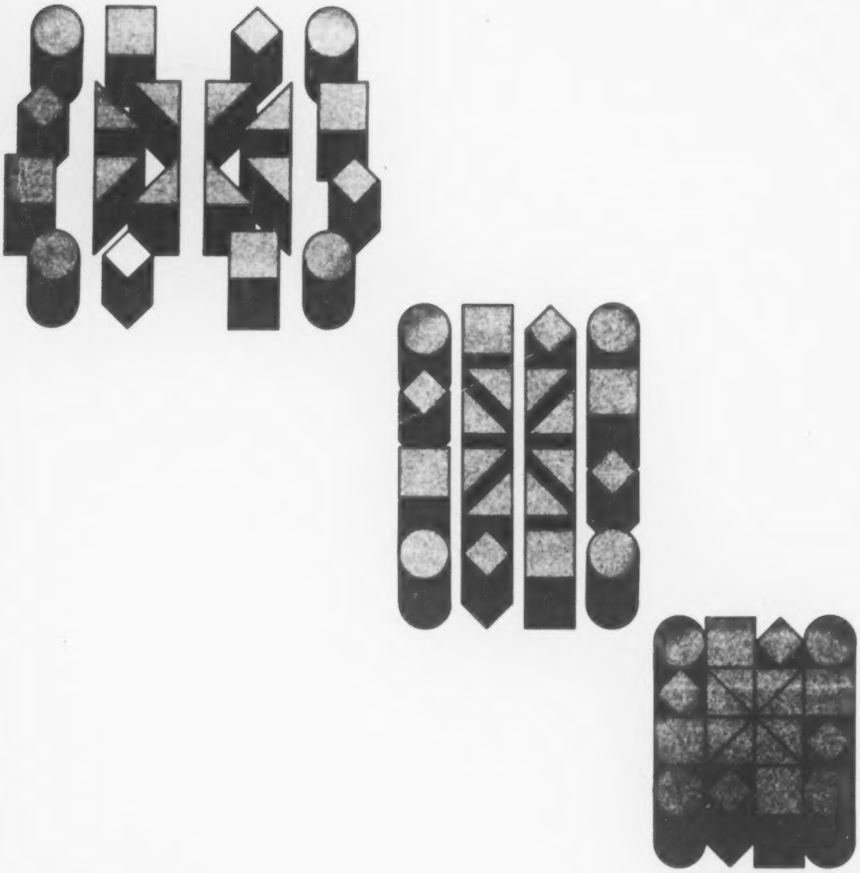
We have also developed a Resource Contingency Plan to acquire options on the output of 800 aMW of resources, with an emphasis on reducing lead times. This will lay the groundwork for bringing these resources on line by 1996 in the event of unexpectedly high load growth or a reduction in the capability of existing resources.

BPA expects to invest over $1 billion to purchase conservation, other resources, and options on resources between 1992 and 1997. Over the past 10 years, using previous resource plans as a foundation, BPA's programs have acquired about 300 aMW of conservation. This is equivalent to one new coal-fired generating unit. These investments in residential and commercial retrofits and industrial efficiency--plus our efforts in support of residential and commercial building codes--have established our capability and flexibility to meet the changing needs of the 1990's.

## CONCLUSION

BPA and its customers are responding to the shift from a period of surplus to an era of more aggressive resource development. We are proud of the progress we have made to date and are confident that the plans we and the Council have laid for meeting future power needs are sound. We appreciate your interest in this significant challenge for BPA and the Pacific Northwest.

# 1990 Resource Program



Bonneville
POWER ADMINISTRATION

July 1990

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# 1990 RESOURCE PROGRAM

## OVERVIEW OF 1990 RESOURCE PROGRAM AND ACQUISITION APPROACHES FOR THE 1990's

This document is a summary providing an overview of the analysis, thought process, and conclusions of the Resource Program. This summary is accompanied by a Technical Report, under separate cover, that provides a more in-depth discussion of the information presented here. Another companion document published under separate cover, the Resource Program Public Comment Summary and BPA's Response, provides a detailed summary of public comments on the Draft 1990 Resource Program and BPA's response to those comments. For a thorough understanding of how BPA arrived at the following conclusions, all three documents should be consulted.

The 1990 Resource Program describes the actions Bonneville Power Administration (BPA) will take to develop new resources to meet the power requirements of its customers. The main focus is to determine what BPA should do in Fiscal Years (FY's) 1992 and 1993. This document presents Energy Resource budgets for these years. However, much care has been taken to define near-term actions aimed at meeting BPA's long-term resource needs. Consequently, proposed program actions are presented for FY's 1994 through 1997. In addition, the 1990 Resource Program addresses some resource-related policy issues.

### Summary of Resource Program Actions

An aggressive, steadily increasing conservation program forms the foundation of the 1990 Resource Program and resource acquisitions for FY's 1992 and 1993. BPA's commitment to a steady ramp-up of the conservation program is key to achieving the least-cost approach to resource development, and to making the conservation resource deliverable in the long run. By itself, conservation can meet much of the likely range of load growth that BPA faces.

A diverse mix of generation resources in small increments is the second cornerstone of the 1990 Resource Program. These generation resources can meet the rest of the likely range of BPA resource needs. Finally, a Resource Contingency Plan prepares BPA to reliably meet load in the event that load growth exceeds the likely range.

More specifically, the Resource Program includes the following actions:

- Acquire between 30 and 35 average megawatts (aMW) per year of cost-effective conservation in all sectors. This commits BPA to a stable and steadily increasing conservation program for the period FY's 1992 through 1997, to a target of acquiring at least 200 aMW by 1997.

- Acquire at least 100 aMW from an "all sources" competitive acquisitions process; a separate 50 aMW of energy is targeted for billing credits.
- Implement 100 aMW of Federal hydro efficiency improvements.
- Undertake a geothermal research and development (R&D) pilot project in a joint venture with other utilities; BPA will acquire up to 30 aMW in this joint venture.
- As part of the Resource Contingency Plan, begin siting and licensing of two combined-cycle combustion turbines (CT's) with a total capacity of over 800 MW, or take equivalent actions which would similarly position BPA to respond to high load growth.

The other primary reasons why BPA has selected this combination of resource actions are:

- Manages Risk Appropriately. This set of resource actions includes capturing low-cost resources that would keep BPA in or near load/resource balance under the medium-high forecast. In addition, BPA will undertake low-cost actions short of acquisitions, such as the siting and licensing of CT's, to prepare BPA to meet the high load growth contingency reliably and efficiently. These actions impose minimal increased financial risk on BPA, and minimize the risk of large future system cost increases.
- Flexibility and Diversity. Significant actions on a wide range of new resource types will be taken, without irrevocably committing BPA to major investments until the need for such investments becomes clear.
- Reflects Existing and Potential Capability to Develop Resources. The resource acquisition budgets and MW targets in this Resource Program are based on a systematic assessment of what is realistically achievable. Information on the lead time needed to expand the delivery infrastructure, potential penetration rates of conservation programs in each sector, and information developed from the conservation and generation acquisition experience of others across the country was especially crucial to BPA's determination of realistically achievable resource acquisition targets. However, if market conditions change or the ability to acquire cost-effective conservation or generation resources becomes greater, BPA will adjust its efforts to capture additional resources.

- Budget and Rate Impacts are Within Bounds. Total capital and expense costs for the proposal, not including the large thermal budget and overheads, average $160 million per year for FY's 1992 and 1993. Considering only these expenditures, this would translate into roughly a 0.4 mill/kWh increase in FY 1992 over the current average Priority Firm (PF) rate. This rough estimate of the implications of the proposal on PF rates does not consider other BPA expenditure needs and, therefore, should not be interpreted as BPA's estimate of future rates. BPA's judgment is that these expenditures and potential rate impacts are acceptable, in view of the load/resource outlook.

## Comparison of Final 1990 Resource Program to Draft 1990 Resource Program

The final 1990 Resource Program plots a more aggressive, ambitious course for resource acquisitions in FY's 1992 and 1993 than the Draft 1990 Resource Program.

There are two primary differences between the final 1990 Resource Program and the Draft 1990 Resource Program. First, more conservation will be acquired in the final program--at least 32 aMW/year in the final vs. 25 aMW/year in the Draft. This decision is consistent with comments received on the Draft 1990 Resource Program--a majority of public comments support increasing the level of conservation acquisitions above the level identified in the Draft. In the final Resource Program BPA is budgeting to acquire cost-effective conservation to the level of the medium-high 1989 load forecast. Information from a preliminary draft of the 1990 load forecast indicates load growth in FY's 1992 and 1993 will be close to the medium-high level (i.e., the draft 1990 medium case is close to the 1989 medium-high in those years). In the Draft, BPA budgeted to acquire conservation at the medium 1989 load forecast. In addition, a major new industrial conservation program has been included in the final Resource Program. This program, which was not included in the Draft, should provide additional low cost conservation opportunities.

Second, resources developed through the billing credits test and all sources competitive acquisitions are considerably increased in the final Resource Program. In the final Resource Program BPA is budgeting for acquisitions of at least 50 aMW from billing credits resources, and at least 100 aMW from an all sources competitive acquisitions process. These acquisitions are an increase of 100 aMW from the Draft. These acquisitions were increased for three reasons: (a) the preliminary 1990 load forecast shows higher loads in the near-term indicating a greater need for resources; (b) BPA received a large number of comments suggesting that the 50 aMW test of the acquisition process proposed in the Draft was not a large enough test; and (c) many commenters support an early implementation of billing credits.

One additional noteworthy change has occurred since publication of the Draft 1990 Resource Program. Budgets for resource acquisitions in FY's 1990 and 1991 have been increased. BPA and many of those commenting on the Draft 1990 Resource Program share the concern that BPA's planned funding for FY's 1990 and 1991 was inadequate to prepare for the higher levels of spending and acquisitions that need to occur in FY's 1992 and 1993 and beyond. BPA has responded by making significant changes in both the 1990 and 1991 budgets. In FY 1990 funding for enforcement of Model Conservation Standards (MCS) codes has been increased by nearly 90 percent. This is primarily a result of the passage of codes in Washington.

The new FY 1991 budget reflects an increase of approximately 60 percent in funding to cover MCS enforcement, an increase of 75 percent in commercial conservation programs, and initiation of a major new industrial program in FY 1991. Prior to these changes, resource acquisitions would have declined slightly from FY 1990 to FY 1991. These budget increases will greatly enhance the ability of these program areas to ramp-up to the ambitious levels of FY 1992 and beyond.

## Acquisition Approaches in the 1990's

It is now clear that the Federal System will need additional resources in the 1990's. After a decade of developing its resource acquisition capabilities, there is a regionwide consensus that BPA needs to accelerate acquisitions of conservation and generation resources.

The resource acquisitions planned for the 1990's represent a substantial increase in the pace of acquiring conservation and generation by BPA. This ambitious level of acquisitions challenges BPA to seek creative, flexible, and intelligent use of a menu of acquisition approaches tailored to meet the objectives of BPA and its customer utilities. To meet increased resource needs, BPA will be evolving toward greater reliance on a more diverse mix of approaches than is currently being used. The familiar methods and programs BPA has used (primarily BPA-designed programs along with codes and standards) will need to be supplemented to meet growing needs. The need for new acquisition approaches is especially apparent for generation resources and for conservation in the commercial and industrial sectors.

A variety of acquisition approaches is important because this provides the flexibility to fully utilize the capabilities of the diverse utility and nonutility communities and efficiently acquire resources when needed. BPA examined a range of alternative acquisition approaches for meeting future resource needs. BPA's future efforts will focus on the following approaches:

- BPA centrally designed programs
- Codes and standards
- Billing credits
- All source competitive acquisitions
- Targeted acquisitions

BPA's goal is to have a relationship with its customers by the middle of the 1990's that is built on shared responsibility for developing cost-effective resources. BPA will provide a stable market for utilities and others interested in developing conservation and generation resources. This market will be characterized by long-term purchases and risk sharing by placing responsibility with the party that can best control the particular risk.

Solicitations for resources will play an increasingly important role in the future. BPA will be soliciting for resources in two ways:

> _Open Solicitations_. An open solicitation provides BPA with a means to compare and evaluate diverse resource options while providing resource developers with an opportunity to propose creative programs. Examples of an open solicitation include the all sources competitive acquisition and the billing credits test which BPA will be undertaking in 1990.
>
> _Targeted Solicitations_. Targeted solicitations are directed to a specific set of conservation end-uses or generation technologies. In a targeted solicitation resource developers would not be competing against each other, but instead against established criteria or standards. Hence, if each proposal meets the established standards, all those responding to a solicitation could be selected. The specific approach in a targeted solicitation would be tailored to the nature of the resources being acquired. Targeted solicitations will be increasingly important for commercial and industrial acquisitions. These solicitations will be designed to match the abilities of BPA customers. However, not all utilities will be able to aggressively pursue commercial/industrial conservation efforts in this way, and BPA will provide assistance to those utilities as necessary.

BPA will make these future purchases from its customers to the maximum extent practical. BPA will look to its customers first since they share the obligation to meet load growth and because of the cooperative working relationships established over the last 10 years. However, other resource providers will be able to participate in the all sources competitive acquisition solicitation, the Geothermal Pilot Program, and the solicitation for resources in the Resource Contingency Plan.

## GUIDANCE FROM THE NORTHWEST POWER PLANNING COUNCIL

The Northwest Power Planning Council (Council) is charged by the Pacific Northwest Electric Power Planning and Conservation Act (Northwest Power Act) with developing a long-range regional Power Plan. In the 1990 Resource Program BPA relies on the Council's 1986 Power Plan and 1989 Supplement to provide the long-range context within which BPA's own specific program and budget planning takes place. This Council guidance helps BPA prioritize its resource analysis, program development, budgets, and staffing over the near term. A primary purpose of the 1990 Resource Program is to explain how BPA translates the guidance provided by the Council into a specific set of near-term actions with associated budgets.

One theme of the Council's 1986 Power Plan and 1989 Supplement that is particularly prominent in this 1990 Resource Program is the importance of planning flexibly to meet uncertain future conditions. In addition, many of the issues addressed in the Power Plan and Supplement are proposed for further action in this Resource Program, such as development and testing of a competitive acquisition process, strategies to use the hydro system more effectively, and exploring a variety of other resource acquisition approaches.

The Council and BPA also have been working together to eliminate confusion over different planning assumptions and tools, and to enhance the existing resource planning capabilities of both organizations. These collaborative efforts have produced joint load forecasts, similar estimates of new resource supply, and a joint decision analysis model. These joint products are being used by both organizations in their current planning efforts. BPA has consulted closely with the Council and the Council staff to ensure as much consistency as possible between the 1990 Resource Program and the development of a new 1990 Power Plan. These consultations have been pivotal in the development of the final 1990 Resource Program. In particular, the Council has urged BPA to be more aggressive in acquiring conservation. With the changes in the final Resource Program, BPA and the Council agree that the appropriate balance has been reached between being more aggressive and being realistic about what can be achieved and at what pace.

## PLANNING FOR UNCERTAINTY

If BPA were certain that actual loads would reflect the 1989 medium load forecast, 1/ and that the capability of the existing power system will not change, BPA would be assured that it was in load/resource balance until the turn of the century. Under the medium forecast BPA has between a zero and 400 aMW surplus throughout the century on BPA's approximately 8,350 aMW system. As Figure 1 shows, if BPA were planning for medium loads, BPA currently has sufficient resources to meet its needs through 2002 and little, if any, action would be necessary to meet load growth. However, if loads grow at the high load forecast rate and no new resources are added, BPA will have a firm energy deficit of over 750 aMW in 1992 that will rapidly increase to a deficit of over 1,500 aMW by 1996. Then again, if loads grow at the low forecast rate, BPA will have a large surplus for the next 20 years.

Obviously, BPA does not know the exact level of future loads. BPA faces nearly a 50 percent chance that existing resources will not be adequate to meet loads in the 1990's, and roughly a 10 percent chance of deficits of over 1,000 aMW in the mid-1990's. This situation challenges BPA to develop a Resource Program that provides assurance of meeting the potential deficits, without making large expenditures that later turn out to be unnecessary.

Recent load growth has reinforced the need to plan flexibly to meet this uncertainty. The load/resource balance shown here is based on BPA's most recent long-term load forecast, released in August 1989. Recently, the Pacific Northwest has enjoyed stronger economic and load growth than was assumed in this forecast. For example, BPA's public utility customer loads grew at a 3.3 percent rate over the 12 months ending March 1990. Although BPA expects that national and regional economic growth will slow and result in a slowing of load growth, this recent strength in the national and regional economies, along with information from a preliminary draft of the 1990 load forecast, suggest that in the near term BPA's loads will be close to the medium-high level in the 1989 forecast. To meet this challenge, BPA has drawn heavily on the Council's guidance on flexible planning for uncertainty.

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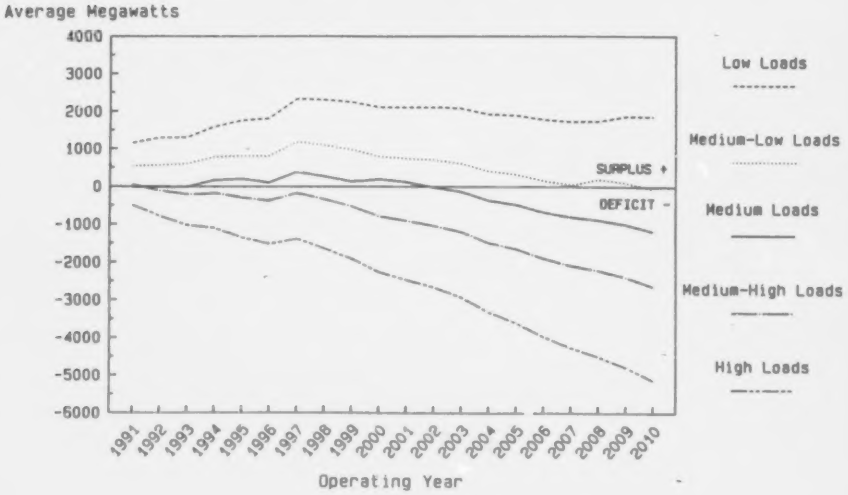
1/ BPA has a contractual obligation to serve the load growth of the investor-owned utilities (IOU's) in the Pacific Northwest if the IOU's give BPA 7-years notice that they wish BPA to serve this load. Since no such request has been made, BPA's resource planning does not assume that BPA will be serving the load growth of the IOU's.

FIGURE 1

## FEDERAL FIRM ENERGY SURPLUSES/DEFICITS

20-Year Projection
Assuming No New Resource Acquisitions



## DECISION FACTORS

BPA has identified eight decision factors that represent the wide range of concerns that influence BPA decisions on a Resource Program. These decision factors are the criteria against which alternative resource programs are evaluated. It is not possible to find one set of resource actions that ranks highest on all eight decision factors. Hence, difficult tradeoffs must be made among these decision factors. A description of these decision factors follows.

- Minimize the Present Value of Total System Costs. BPA seeks a Resource Program that results in the lowest long-run system costs. System costs include: costs of installing new conservation, generation, transmission and distribution facilities; operating cost; fuel costs; customer and consumer costs incurred for conservation measures; and quantifiable environmental costs. In other words, BPA seeks the least-cost approach to serving its customers' loads.

- Ensure That BPA Has The Ability To Meet High BPA Firm Loads in 1994 Through 2000, If Necessary. BPA's obligation to meet the loads of its customers is not limited to a particular load forecast. Prudent planning requires that BPA examine the reasonable actions it could take to prepare to meet higher than expected loads, especially in view of the potential for significant energy deficits in the mid-1990's.

- Minimize BPA Financial Risk. This factor focuses on the effect of alternative resource programs on BPA's ability to make its Treasury payment on time. It also addresses the effects of alternative resource programs on BPA's ability to meet its other financial goals.

- Minimize Near-Term Rate Impacts. An important BPA goal is to keep rates for BPA power low. This enables BPA to remain an attractive power provider to its customers and to contribute to the financial health of the Pacific Northwest economy. This factor addresses the effects of alternative resource programs on near-term rates.

- Minimize Long-Term Rate Impacts. The effects of alternative resource programs on long-term rates also are important to BPA's ability to remain an attractive power provider to its customers and to the health of the Pacific Northwest economy. This factor is listed separately because some alternative resource programs may result in a short-term rate increase to achieve a long-term rate decrease.

- Minimize Exposure to Economic Risks of Adjusting to Unplanned Changes in Load Growth, Resource Availability, And Costs. BPA wants to avoid two kinds of economic risks. The first is the risk of acquiring an expensive resource that later turns out not to be needed. The second is the risk of being forced to acquire an expensive resource, because of a failure to capture lower-cost resources earlier when they were available, or because rapid load growth makes expensive resources the only "quick fix" available.

- Minimize Local And Global Environmental Impacts From 1992 Through 1993 Resource Actions. This decision factor focuses on nonquantifiable local and global environmental impacts of resource actions. Subsequent decisions on the acquisition of specific resources resulting from a Resource Program decision will include consideration of site-specific environmental impacts as well as compliance with other requirements of the National Environmental Policy Act (NEPA).

- Maximize Resource Deliverability in View of Social/Political Factors. Social/political influences are fundamental to whether a resource is achievable. BPA wants to avoid substantial expenditures of its and the region's efforts and financial resources on electricity resources that have a low probability of being achieved.

BPA solicited public comment on these decision factors and how they should be used in choosing among alternative strategies. The majority of public comments were supportive of these decision factors as balanced and comprehensive. The total system cost criterion received the most comment. While some commenters argued for increased emphasis on this decision factor, others suggested that minimizing near-term rate impacts was most important.

In deciding on the 1990 Resource Program, BPA carefully considered all of the public comment on decision factors. BPA has not established a priority ranking for these eight decision factors. BPA remains committed to a balanced and flexible approach in comparing resource alternatives.

## RESOURCE SUPPLY

BPA is fortunate to have a wide variety of resources to choose from to meet future needs. Table 1 shows the supply of new resources estimated to be available to BPA, with their average levelized costs in mills per kWh. The levelized cost of a resource includes all direct costs of the resource over its effective life. Levelized costs are expressed in both real (inflation adjusted) and nominal dollars. 2/

The resources listed in Table 1 are not in exact order of levelized cost. The order in Table 1 reflects the advantages some resources have, such as small unit size and short lead times, which are not reflected in their levelized costs.

As the Table shows, BPA expects to be able to meet nearly 3,000 aMW of load growth with a combination of conservation, cogeneration, environmentally sound new small hydro, system efficiency improvements, and better use of nonfirm hydropower from the existing system. In addition to the new resources shown in Table 1, BPA is exploring opportunities to arrange power exchanges and imports with other utilities that also could help meet BPA's future load growth. All of these resource opportunities make it very likely that BPA can meet its loads through the end of the century, and beyond, without resorting to the construction of large coal or nuclear plants. However, capturing these resource opportunities for the future will require some hard work over the next several years.

A note of caution also should be sounded about the resource supply estimates. BPA, the Council, and others are continually developing new information that will alter some of the resource supply estimates shown in Table 1. As a result of this continuing work, resource costs and amounts may go up or down, and new resources may be added to the "stack" in the future.

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2/ The Council recently began reporting both real levelized and nominal levelized costs. The Council felt that nominal levelized costs were more comparable to rates. BPA continues to use real levelized costs because they have been the most useful summary of resource costs for BPA's purposes. BPA will report resource costs in both real and nominal levelized terms. BPA's real levelized costs can be roughly converted to nominal levelized costs by multiplying them by the following factors, which depend on the resource's lifetime. For resources with 20-, 30-, 40-, or 50-year lives, multiply real levelized costs by 1.53, 1.77, 1.97, or 2.14, respectively, to convert to nominal levelized costs. For the purpose of this report BPA calculated nominal levelized costs for a normalized 40-year resource life by multiplying each real levelized cost by 1.97.

## TABLE 1

## BPA'S RESOURCE STACK

| Resource | Real Levelized Cost a/ mills per kWh (88$) | Nominal Levelized Costs b/ | BPA Supply 1992-2010 Med Loads | BPA Supply 1992-2010 High Loads |
|---|---|---|---|---|
| Hydro Efficiency Improvements | 13 | 26 | 112 | 112 |
| Conservation: | | | | |
| Refrigerators c/ | 13 | 26 | 34 | 45 |
| Freezers c/ | 16 | 32 | 12 | 16 |
| Industrial | 16 | 32 | 120 | 191 |
| Irrigation | 16 | 32 | 14 | 14 |
| New Commercial | 19 | 37 | 109 | 207 |
| Water Heat c/ | 19 | 37 | 114 | 152 |
| Small Hydro 1 | 20 | 39 | 23 | 23 |
| Conservation: | | | | |
| Existing Commercial Remodel and Renovation | 20 | 39 | 72 | 72 |
| New Manufactured Housing | 23 | 45 | 45 | 47 |
| New Single-Family Residential (MCS) d/ | 27 | 53 | 66 | 162 |
| New Multifamily Residential (MCS) | 28 | 55 | 11 | 12 |
| Existing Multifamily Residential | 29 | 57 | 12 | 12 |
| Existing Single-Family Residential | 30 | 59 | 62 | 62 |
| Existing Commercial Discretionary | 30 | 59 | 86 | 86 |
| Cogeneration 1 | 30 | 59 | 31 | 31 |
| CT's and Displaceable Purchases | 26-34 | 51-67 | 1500 | 1500 |
| Small Hydro 2 | 34 | 70 | 26 | 26 |
| Cogeneration 2 | 35 | 69 | 125 | 125 |
| BPA Trans Efficiency Improvements | 36 | 71 | 34 | 34 |
| WNP-1 and -3 | 34 e/ | 67 | 1619 | 1619 |
| Cogeneration 3 | 40 | 79 | 250 | 250 |
| BC Hydro Imports | 40 | 79 | 500 | 500 |
| Coal | 40 | 79 | 5000 | 5000 |

a/ Year 2000 real levelized cost in 1988 mills/kWh. Levelized costs for generating resources assume 50 percent public and 50 percent private financing. Levelized costs for conservation resources assume 100 percent debt financing at a 9.2 percent nominal interest rate.

b/ Nominal levelized costs have been normalized to a 40-year operating life. Financing assumptions are the same as those used for real levelized costs.

c/ Achievable aMW's are for 1995-2010.

d/ Includes 11 aMW of solar for Medium loads and 14 aMW of solar for High loads.

e/ Assumes all public financing.

## THE FINAL RESOURCE PROGRAM

BPA's challenge is to develop a resource program that uses the resources in Table 1 to fill the resource needs depicted in Figure 1, while attempting to meet the eight decision factors described previously. BPA staff have identified a final Resource Program which is evaluated against the Draft proposal.

The following are some of the considerations reflected in the final Resource Program:

- BPA should focus on an aggressive conservation program. This approach is least-cost and captures the best conservation opportunities. These opportunities include incorporation of energy efficiency measures in the construction of new buildings, during the remodeling and renovation of existing commercial buildings, and during equipment replacement cycles in the commercial and industrial sectors. While it may be possible to retrofit such measures after new construction or remodeling/renovation is completed, it typically is prohibitively expensive to do so, and thus could render the energy efficiency gain uneconomic. If BPA failed to capture these cost-effective resources now, BPA likely would be forced to pay a steep premium to replace these resources later with more costly resources. In addition, because in many cases the supply of conservation resources fluctuates with economic growth, focusing on these resources minimizes BPA's economic risk.
- It is important that BPA have a diversified resource portfolio. BPA should not overemphasize one segment of the resource marketplace. It is particularly important that BPA gain experience in acquiring generation resources. For BPA the early 1990's will be a period of testing and refining its generation resource acquisition capability.
- It is important that BPA commit to a predictable, stable conservation program aimed at achieving a specified minimum level of savings by a particular time. While conservation does offer flexibility through development in small increments, stability is important because conservation cannot be quickly ramped up or down to meet changing resource requirements cost-effectively. In addition, long-term achievement of savings is harmed by frequent changes in program direction. Also, those who deliver the conservation resource--utilities contractors, and governments--need to be able to look ahead with some certainty while carrying out their work. Finally, having a specific target gives the overall effort a goal and a standard by which to be judged. BPA has determined that a target

of at least 200 aMW of conservation savings from 1992 through 1997 is prudent. 3/ BPA views this 200-aMW figure as a floor. If market conditions change or the ability to acquire conservation savings becomes greater, BPA will adjust its efforts to capture more of this cost-effective resource. BPA is committed to purchasing as much cost-effective conservation as can be reliably delivered in this period.

- Some generation resources should be made ready to meet extraordinary resource requirements. This means developing the capability to option and acquire them, and gaining actual experience in doing this.

With these considerations in mind, BPA set out to construct a proposal that implements the Council's guidance and at the same time comes as close as possible to meeting the decision factors.

The proposal is described below. Tables 2 and 3 identify BPA's resource acquisition goals for the 1990's as adopted in the final 1990 Resource Program. Although the Resource Program is focused on FY's 1992 and 1993, the savings and expenditures for FY's 1990 and 1991 have also been included to set a context for the Resource Program efforts.

Table 2 provides a detailed breakdown of the resource program components for the years 1990 through 1993. Table 3 shows the aMW targets for FY's 1990 through 1997.

### 1. General Direction of the Final Resource Program

The final Resource Program presents specific budgets for FY's 1992 and 1993, and sets a course of action through 1997. Starting with the increased program budgets for FY's 1992 and 1993, FY's 1994 through 1997 show a steadily increasing resource acquisition effort. Compared to the current (1990) program budgets, BPA's annual resource acquisition budget will increase roughly 53 percent from FY's 1990 to 1993, to $167 million/year.

The final program establishes a very ambitious course for resource acquisitions. To accomplish this large task BPA proposes to move toward substantially greater resource flexibility developed in close partnership with its customers. BPA will emphasize the sharing of

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3/ This target does not include additional conservation which may be acquired using "all sources" acquisition methods (i.e., billing credits and competitive acquisitions).

## TABLE 2

### FINAL RESOURCE PROGRAM, FY 1990 THROUGH FY 1993
(Nominal dollars in millions and incremental aMW) a/

| | 1990 | | 1991 | | 1992 | | 1993 | |
|---|---|---|---|---|---|---|---|---|
| | $$$s | aMW | $$$s | aMW | $$$s | aMW | $$$s | aMW |
| CONSERVATION | | | | | | | | |
| Commercial | $20 | 3 | $26 | 5 | $33 | 8 | $36 | 10 |
| Industrial b/ | $12 | 27 | $14 | 31 | $18 | 7 | $20 | 9 |
| Residential | $57 | 6 | $65 | 8 | $64 | 12 | $67 | 14 |
| Agriculture | $1 | <1 | $2 | <1 | $2 | <1 | $2 | <1 |
| Conservation Subtotal | $90 | 37 | $107 | 43 | $117 | 28 | $126 | 32 |
| GENERATION | | | | | | | | |
| Hydro System Efficiency Improvements | <$1 | 0 | <$1 | 20 | <$1 | 25 | <$1 | 25 |
| Geothermal | $1 | 0 | $1 | 0 | $1 | 0 | $1 | 0 |
| Resource Contingency Plan | $0 | 0 | $4 | 0 | $12 | 0 | $1 | 0 |
| Other c/ | $11 | 0 | $10 | 0 | $9 | 0 | $10 | 0 |
| Generation Subtotal | $13 | 0 | $15 | 20 | $23 | 25 | $13 | 25 |
| ALL SOURCES | | | | | | | | |
| Billing Credits | <$1 | 0 | <$1 | 0 | $2 | 9 | $5 | 6 |
| Competitive Acquisition | $2 | 0 | $7 | 0 | $8 | 0 | $20 | 30 |
| All Sources Subtotal | $3 | 0 | $7 | 0 | $11 | 9 | $25 | 36 |
| State and Local Government | $3 | | $3 | | $3 | | $3 | |
| TOTAL d/ | $108 | 37 | $132 | 63 | $153 | 62 | $167 | 93 |
| Plus: Support Services and Corporate Overhead | $10 | | $14 | | $15 | | $16 | |
| GRAND TOTAL | $118 | 37 | $146 | 63 | $167 | 62 | $183 | 93 |

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a/ Forecasted resource planning costs are incorporated into estimated expenditures in each sector.
b/ Includes 25 aMW/year from Con/Mod in FY's 1990 and 1992.
c/ Other includes Idaho Falls payments and generation support.
d/ Numbers may not add due to rounding.

# TABLE 3

## RESOURCE PROGRAM ACQUISITIONS, BY SECTOR, FY 1990 THROUGH FY 1997
(savings in aMW)

| Resource Type | Incremental Savings Acquired in Year 1990 | 1991 | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | Cumulative 90-97 | 92-97 |
|---|---|---|---|---|---|---|---|---|---|---|
| CONSERVATION | | | | | | | | | | |
| Commercial | 3 | 5 | 8 | 10 | 8 | 9 | 10 | 13 | 65 | 58 |
| Industrial a/ | 27 | 31 | 7 | 9 | 11 | 12 | 13 | 15 | 124 | 67 |
| Residential | 6 | 8 | 12 | 14 | 14 | 15 | 15 | 16 | 98 | 84 |
| Agriculture | <1 | <1 | <1 | <1 | <1 | <1 | <1 | <1 | 6 | 5 |
| Conservation Subtotal | 37 | 43 | 28 | 32 | 33 | 36 | 39 | 44 | 293 | 213 |
| GENERATION b/ | 0 | 20 | 25 | 25 | 25 | 27 | 10 | 10 | 142 | 122 |
| ALL SOURCES c/ | 0 | 0 | 9 | 36 | 40 | 40 | 20 | 5 | 150 | 150 |
| TOTAL d/ | 37 | 63 | 62 | 93 | 98 | 103 | 69 | 60 | 585 | 485 |

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a/ Includes 25 aMW/year from Con/Mod in FY's 1990 and 1991.

b/ Reflects only generation resources to be acquired in this Resource Program; does not reflect generation resources which may be acquired in subsequent resource programs to meet projected load growth beyond the early 1990's.

c/ Competitive Acquisitions and Billing Credits processes.

d/ Numbers may not add due to rounding.

responsibility and authority for conservation programs with its customer utilities, while also providing them more flexibility than BPA-designed programs alone can offer. Through these efforts BPA will be expanding resource development beyond the programs designed, implemented, and funded up-front by BPA that were prevalent during the 1980's.

The period 1991 through 1997 will see a transition from the current approach to a blend of BPA-designed, utility-designed, and developer-initiated programs. Crucial to this transition will be the refinement of methods to verify contracted-for conservation savings, a market-oriented pricing system, and the development of new business relationships between BPA and its partner utilities.

The movement away from reliance on BPA-designed programs is not a radical departure for BPA's customer utilities. Many utilities have operated some of their own conservation programs in recent years. Creative financing of conservation investments was used by the Eugene Water & Electric Board (EWEB)--EWEB undertook the financing, with debt service provided over time by BPA. BPA worked with several utilities to enable the transfer of conservation savings from three public-owned utilities to an investor-owned utility.

Although much attention will be given to collaboratively designed approaches, BPA will continue to offer technical support and other "value-added" services. BPA is committed to working with its customers in new, flexible, and creative ways to meet their power needs. BPA also will encourage partnerships between its customers and other entities to develop the resources where necessary.

BPA remains committed to the least-cost approach for acquiring resources. This means acquiring all cost-effective conservation. In the Draft 1990 Resource Program BPA proposed to focus on lost-opportunity resources. However, BPA is interested in all cost-effective conservation. Typically lost-opportunity conservation is lower cost because it is an incremental cost to the cost of pre-planned construction or equipment replacement. It is cost-effective because of its relatively low cost. But other low cost conservation is also cost-effective (e.g., much industrial conservation). The idea is to capture cost-effective conservation savings when the opportunities for acquiring them are best. This includes securing the resource not only in new construction but also in existing buildings when they are undergoing renovation/remodeling and at the time of replacement of equipment in industrial/commercial applications. BPA does not want to forego a cost-effective resource that would be too costly to acquire later.

Cost-effective conservation resources provide reliable energy savings for the BPA system at or below the cost of other available resources (given the Northwest Power Act 10 percent conservation cost credit). BPA's current estimate of the cost-effectiveness threshold for resources is represented by the Alternative Cost for Billing Credits Resources (July 1990). Resource characteristics, such as on-line date, availability, useful life, seasonality, etc., impact the relative value of each resource for the electric system. The alternative cost for a particular resource represents the stream of costs for resources BPA would otherwise have to acquire to meet its load obligations.

The final program increases conservation budgets but not to the point that reliable, effective delivery is jeopardized. In FY's 1992 and 1993, BPA estimates it will acquire 30 to 35 aMW/year from programs specific to conservation; these acquisitions increase to 40-45 aMW/year by FY 1997. This final program is a commitment that conservation efforts through 1997 will not be reduced except for an extreme change in circumstances. By itself, conservation can meet much of the likely range of load growth that BPA faces.

Over the period FY's 1992 through 1997, the real levelized cost to BPA of the conservation portion of the final program averages about 13 mills/kWh, while the total cost (i.e., to all parties, including BPA, utilities, and consumers) averages about 22 mills. The estimated BPA cost included in the final program provides for research and development, pilot programs, market research, and other activities related to understanding the resources.

The following is a brief description of the resource acquisition efforts by sector:

### 2. Commercial Conservation

The commercial sector presents significant opportunities for cost-effective resource development. Since there is much new construction in the sector and a great deal of remodel and renovation activity, it is important that this sector be as energy-efficient as possible. BPA will acquire 8 aMW in FY 1992 and 10 aMW in FY 1993 from this sector. The expected total acquisition from commercial sector programs is 58 aMW for FY's 1992 through 1997. For FY's 1992 and 1993 the final budgets are $33 and $36 million, respectively.

The total funding for the commercial sector will increase significantly between 1990 and 1993. Numerous commenters on the Draft 1990 Resource Program were concerned that a dip in funding level for 1991 would seriously inhibit meeting the acquisition targets for FY's 1992 and 1993. BPA has added an additional $10 million to the previously proposed FY 1991 budget, most of which will be devoted to testing enhancements to the Energy Smart Design and the development and testing of acquisition payments.

Commercial sector activities include: Energy Smart Design, Commercial Acquisition Incentives, Commercial Acquisition Support (which includes Model Conservation Standards and research, development and demonstration), and the Commercial Incentives Pilot Program through the contract closeout in 1990.

BPA believes it can successfully bridge between its current efforts and competitive acquisitions. BPA will continue to test enhancements for Energy Smart Design in 1991. Every effort will be made to move toward alternative acquisition methods (billing credits, targeted acquisitions) in 1992 to more fully leverage the capabilities of utilities and the private sector. BPA's priority is to fully implement a cooperatively designed program and to offer price/proof-of-delivery contracts to interested utilities or others. These actions will be the highest priority because, once established, they have the highest likelihood of allowing the region to rapidly increase production of the commercial conservation resource without stressing the delivery infrastructure beyond its limits.

### 3. Industrial Conservation

The industrial sector also offers significant opportunities for cost-effective resource acquisition. The industrial sector activities in the final Resource Program include: Energy $avings Plan (E$P), the Major Plants Program, 4/ Conservation Modernization (Con/Mod), and the research, development and demonstration efforts.

BPA will acquire 7 aMW in FY 1992 and 9 aMW in FY 1993 in this sector. The budgets for FY's 1992 and 1993 are $18 million and $20 million, respectively. These budgets include an estimated $7 million/year for the Con/Mod program. The expected total acquisition for FY's 1992 through 1997 from this sector is 67 aMW.

Planned future industrial conservation efforts represent a substantial increase in the pace of acquisitions in this sector. The early years will be a period of transition as new business relationships are developed and energy savings verification methods are refined. Future efforts will feature: (1) increased reliance on utilities (because they are best positioned to tap the unique industrial conservation opportunities that are available in their service territories); (2) streamlined program management; (3) risk sharing; (4) BPA playing an important role in providing a stable market for industrial energy efficiency improvements; and (5) BPA payments over time, as savings accrue.

The initial phase of BPA's accelerated effort in the industrial sector will focus on (1) expanding the Energy $avings Program to include new and expanding industries; (2) adding a motors rebate element; (3) providing for audits to find potential projects; (4) permitting operation of the E$P program by firm power customers; and (5) beginning work on the Major Plants Program.

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4/ The Major Plants Program is a new effort by BPA to purchase energy savings at an established unit price from the largest industrial firms and the major Federal installations in the service areas of BPA's firm power customers.

### 4. Residential Conservation

The activities in this sector include: the Northwest Energy Code Program, Super GOOD Cents, New Manufactured Housing, Residential Weatherization, Solar Access, Blue Clue for Appliances (including water heating efficiencies), and research, development and demonstration. BPA will also continue debt service payments in the EWEB Financing Agreement.

Residential sector programs will acquire 12 aMW in FY 1992 and 14 aMW in FY 1993. The residential sector budgets for FY's 1992 and 1993 are $64 and $67 million, respectively. The expected total acquisition for FY's 1992 through 1997 from this sector is 84 aMW. These budgets reflect the expected cost of implementing State-wide codes. Table 3 shows the incremental energy savings by year, but it should be acknowledged that after codes are in place, additional increments of savings continue far into the future. Therefore, the total energy savings from these expenditures are somewhat understated in the Tables.

The final program shows a strong commitment to meeting the Council's objectives for the residential sector. It includes efforts in the areas of existing residences, new residences, new manufactured housing, appliances, and water heating. Programs in all but the existing residential area are aimed at gaining lost-opportunity resources. Finally, BPA continues its substantial support for State-wide adoption of Model Conservation Standards.

### 5. Agricultural Conservation

From the agricultural sector, the final resource program acquires less than 1 aMW in FY's 1992 and 1993. The expected total acquisition for FY's 1992 through 1997 from this sector is approximately 5 aMW. The FY's 1992 and 1993 budgets are about $2 million/year. This is a discretionary program, but the resource is estimated to cost 16 mills/kWh, which makes this program very cost-effective. This program promotes installation of low-pressure devices on center pivot systems, mainline improvements, and fitting redesign. The final Resource Program meets the Council's guidance to maintain programs to assist with implementation of cost-effective efficiency improvements for irrigation.

### 6. All Sources Acquisition Approaches--Competitive Resource Acquisitions and Billing Credits

#### a. Billing Credits

Billing credits is another mechanism that will be relied upon to help BPA meet its more ambitious resource acquisition goals in the 1990's. Section 6(h) of the Northwest Power Act directs BPA's Administrator to grant billing credits to customers upon request for resources that reduce BPA's obligation to serve loads. Billing credits are based on the premise that independent utility action to develop conservation or generation resources reduces BPA's need to acquire resources. BPA developed a Billing Credits Policy in 1984. Discussions with utilities have convinced BPA that the Billing Credits Policy is flexible and can provide a workable mechanism for resource acquisition. Therefore, BPA has decided to go forward with a 50 aMW billing credits test in the final Resource Program.

BPA's objective in this first use of billing credits is to ensure that this mechanism is workable for resource developers. If needed, the Billing Credits Policy will be revised based on the results of this test.

BPA will have a solicitation for billing credits resources in the summer of 1990 and anticipates that a portion (9 aMW) of these resources will become available by 1992. In the final Resource Program $2 million is budgeted for billing credits in FY 1992 and $5 million is budgeted for FY 1993. It is expected that additional conservation (beyond BPA's target of at least 200 aMW from FY 1992 through FY 1997) will be acquired from this solicitation since, all other things being equal, conservation will be selected prior to generation.

### b. All Sources Competitive Acquisitions

As the Federal System approaches load/resource balance, BPA believes that it is important to develop proven capability to acquire resources as needed. The competitive acquisition will provide BPA with the ability to systematically solicit, evaluate, and select resource proposals that are offered for purchase. In addition, it will enable BPA to compare diverse resource alternatives while providing developers with an opportunity to propose creative projects or measures. The final Resource Program includes an initial competitive solicitation for a minimum of 100 aMW. This is double the size of the resource acquisition test proposed in the Draft 1990 Resource Program. BPA has concluded (with the support of many commenters on the Draft 1990 Resource Program) that a 100 aMW effort is needed to demonstrate this approach and fully capture its advantages. BPA also concluded that it should be expanded to include demand-side measures in a parallel solicitation. The increased size of this effort is expected to attract greater interest and higher quality resources. A 100 aMW effort may be particularly important in light of preliminary information indicating that Federal System loads are expected to grow at a somewhat faster rate for the next few years than was assumed in the Draft. The inclusion of demand-side measures will assure that BPA does not overlook viable, cost-effective conservation measures that might not be captured in its other programs. BPA plans to issue a solicitation for resources in the fall of 1990, and begin taking delivery of part of the power in FY 1993. Budgets of $8 million in FY 1992 and $20 million in 1993 are included for this acquisition test in the final program.

### 7. Generation

A modest quantity of new generation resources are proposed in the near term, but the more important role generation resources play is providing the flexibility to respond to changing load circumstances. With an aggressive, stable conservation effort, BPA proposes to develop generation resources in varying amounts depending on changing load and resource situations. These resources will come from three sources, those submitted under the competitive acquisition and billing credits solicitations, and specific resource actions that BPA is in a unique position to initiate.

The competitive acquisition solicitation will provide the vehicle for acquisition of generation resources that can be most effectively developed by customers or independent developers. This includes resources such as cogeneration, hydroelectric, or other conventional and nonconventional generating technologies.

The generation resource actions included in the final Resource Program consist of three components, each intended to meet a particular objective. A discussion of the components and their objectives follows.

### a. Hydro, Thermal, and Transmission Efficiency Improvements

Efficiency improvements consist of control system improvements at several major Federal hydroprojects as well as improvement projects at the Supply System's WNP-2 facility. These improvements are estimated to have an average real levelized cost of less than 13 mills/kWh and could yield approximately 115 aMW (100 aMW of hydro, 15 aMW of thermal) to the Federal System. The final Resource Program includes capturing these efficiencies over a 5-year period to allow time for developing institutional arrangements with the Corps of Engineers, Bureau of Reclamation, and the Supply System, and coordination with their maintenance activities. The budgets for hydro efficiency improvements in FY's 1992 and 1993 are $0.3 million/year. 5/ In addition, there are an estimated 10 aMW of low-cost transmission efficiency improvements on BPA's transmission system. Although these transmission efficiency improvements are identified as resource acquisitions, presently they are to be budgeted and implemented through BPA's Transmission System Development Program ($4 million/year in FY's 1992 through 1997).

### b. Geothermal Pilot Project

The Pacific Northwest is thought to have large geothermal resources. Estimates of developable resources are in the thousands of megawatts. Due to the high risk and costs of geothermal exploration, and because the region's long time power surplus has precluded power purchases, developers have had little incentive to confirm resources. Even if resources are found, land use issues must be resolved in many areas before power plants and transmission lines can be built. Confirming the existence and developability of this low-cost, renewable resource at several of the largest, most promising sites in the region would have great value to BPA and Northwest utilities because it would help prevent unnecessary commitments to more expensive power sources.

Consistent with previous suggestions by the Council, BPA will participate in pilot projects aimed at confirming resources and determining developability at three of the largest, most promising sites in the region. BPA will do this by purchasing--in joint ventures with regional utilities--up to 10 aMW of energy from each of the three projects. Contracts

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5/ The majority of the costs of these improvements are budgeted by the Corps of Engineers and Bureau of Reclamation, and later repaid by BPA with interest.

with developers will pay only for electricity delivered (in other words, BPA will not finance the projects). If joint ventures can be arranged, power contracts may be awarded as soon as FY 1991, with power deliveries commencing about 1995. Since no payments will be required until plants come on line, the final Resource Program requires no outlays for acquisition during FY's 1992 and 1993.

### c. Resource Contingency Plan

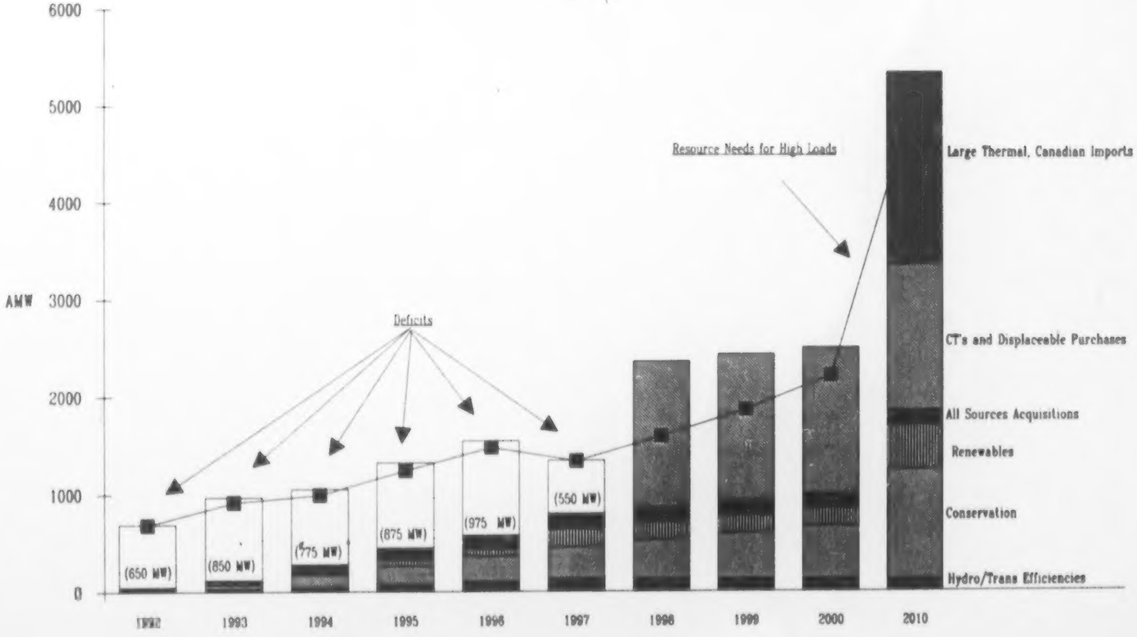
The first four elements of the final Resource Program--conservation, the 150 aMW of billing credits and competitive resource acquisitions, efficiency improvements, and the geothermal pilot project--would be sufficient to cover the deficits shown in Figure 1 for the 1989 medium-high load forecast through 1997. However, as Figure 1 also shows, deficits of over 1,000 aMW by 1996 are possible under the high load forecast. There is roughly a 10 percent chance of load growth of this general magnitude. Furthermore, preliminary results from the 1990 joint load forecast suggest that the medium-high load forecast should be about 200-400 aMW higher, with the draft 1990 medium case falling close to the 1989 medium-high. The Council has advocated the development of flexible resource options to cover the risk of large, but fairly unlikely, near-term deficits. BPA developed a Resource Contingency Plan to put this concept into practice. The Resource Contingency Plan is the source of the fifth major component of the Resource Program.

Figure 2 illustrates BPA's exposure to deficits under the high load growth scenario, without a Resource Contingency Plan. The assumption made in Figure 2 is that BPA moves as fast as possible, starting in FY 1993, to develop all available resources to meet high loads. For example, aggressive programs to capture discretionary conservation are started, and new generation resources are added as soon as possible. However, even after "pulling out all the stops," BPA could not add enough new long-term firm resources to meet deficits under the high load scenario. As shown in Figure 2, deficits of as much as 1,000 aMW in 1996 would still remain, after making all feasible resource additions.

The Resource Contingency Plan concludes that it appears worthwhile to take actions now, at reasonable cost, to reduce this risk of deficits. The most promising action appears to be to start soon to option about 800 aMW of resources which, if necessary, could be brought on-line by 1996. This will likely, but not necessarily, be the siting and licensing of two combined-cycle CT's with a total capacity of over 800 MW. Another possibility may be the optioning of cogeneration potential. This action will significantly increase BPA's assurance of having sufficient cost-effective firm resources on-line if loads grow much faster than the medium forecast, or if a major resource fails. The cost of this action in FY 1992 is estimated to be approximately $12 million, and the continuing cost of maintaining an "optioned" status would be about $1 million/year. Only if the option were exercised would acquisition costs be incurred and energy received. Locating these resources in the Puget Sound area also may help address the transmission capacity limitations in that area if the resources are eventually acquired.

FIGURE 2

## RESOURCE CONTINGENCY PLAN
Resource Availability Versus Need
(High Loads and No Resource Contingency Plan)



BPA intends to proceed with the implementation of this contingency plan through a solicitation in early 1991. The solicitation will seek optionable resources that meet the criteria for BPA's contingency plan in a flexible, cost-effective manner, but will not categorically exclude any resources. In the interim, BPA will seek to resolve several remaining questions regarding short lead-time displaceable resources, including the future cost and availability of natural gas.

## EVALUATION OF THE FINAL RESOURCE PROGRAM

In the Draft 1990 Resource Program a proposed set of resource actions was developed and evaluated against five alternatives using the eight decision factors. 6/ Although the Draft proposal did not rank the highest on all eight decision factors, it ranked first (or tied for first) on seven of the eight decision factors. The Draft proposal ranked last in terms of near-term rate impacts, but the estimated 0.5 mill impact it creates was judged not to offset its other advantages--particularly in light of recent information on the Federal System load/resource balance over the decade of the 1990's. 7/

This section presents a comparison of the final Resource Program with the Draft proposal according to the eight decision factors. This comparison is made using the same data, assumptions, and analytical model as were used for analysis in the Draft. This evaluation indicates that the final Resource Program improves upon the Draft proposal when compared on a quantitative basis.

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6/ The alternatives, as presented in the Draft 1990 Resource Program, are:

| | |
|---|---|
| Alternative 1: | The Draft Resource Program, which included: 20-25 aMW of conservation per year from FY's 1992 through 1997 to a target of 200 aMW by 1997; a 50 aMW generation acquisition test, 100 aMW of hydro efficiency improvements, a 30 aMW geothermal pilot project, and acquiring options on two CT's. |
| Alternative 2: | Acquire half of the lost-opportunity conservation of the proposal and no generation resources or discretionary conservation (primarily weatherization). |
| Alternative 3: | Acquire the generation resources of the proposal and no conservation. |
| Alternative 4: | Acquire the conservation resources of the proposal and no generation resources. |
| Alternative 5: | Acquire the lost-opportunity conservation of the proposal and the generation resources, but no discretionary conservation. |
| Alternative 6: | Acquire all the conservation and generation of the proposal, except the siting and licensing of two CT's. |

7/ See the Technical Report for a detailed discussion of the ranking of the Draft proposal relative to the five alternatives.

The results of this comparison are summarized in Table 4 and explained below:

- Minimize the Present Value of Total System Costs. The present value of total system costs of the final Resource Program is $102 million less than that of the Draft proposal. By increasing the size of the all sources competitive acquisition and the billing credits test, as well as expanding efforts at capturing cost-effective conservation from 1992 through 1997, an additional $102 million saving is realized over the Draft proposal. The other alternatives all result in higher total system costs than the proposal.

- Ability to Meet Contingencies. The second column in Table 4 shows a 131 aMW energy surplus in FY 1997 resulting from actions specified in the final Resource Program (including the contingency plan acquisitions), assuming that high load growth occurs in the early 1990's. The final Resource Program puts BPA in an even better position for dealing with contingencies (such as prolonged high load growth) than did the Draft proposal due to additional resource acquisitions in 1992 and 1993. In this case it was also assumed that more conservation would be acquired from 1994 through 1997 due to high load growth and that 150 aMW of cogeneration would be acquired by 1997.

- Minimize BPA Financial Risk. Financial risk is measured as the probability of BPA incurring significant negative cash-flows in a particular year. Significant negative cash-flows are judged to be cash-flow shortfalls of more than $200 million. The final Resource Program decreases this likelihood by about 1 percent relative to the Draft proposal. This difference, however, is not statistically significant. Therefore, on the basis of financial risk, the final Resource Program and the Draft are ranked equally.

- Minimize Near-Term Rate Impacts. The effect of the final Resource Program on rates in 1992 and 1993 compares favorably to the impact of the Draft proposal. Relative to the impact of the 1990 and 1991 budget, the final Resource Program causes a 0.1 mill/kWh smaller effect on rates than that caused by the Draft proposal. Thus, the contribution of the final Resource Program to an increase in the PF rate, assuming no other changes in BPA costs, is estimated to be 0.4 mills/kWh.

- Minimize Long-Term Rate Impacts. The final Resource Program does not compare quite so favorably to the Draft proposal when considering effect on the average PF rate from 1998 through 2010. The final Resource Program causes a 0.2 mill increase in average long-term rates relative to the Draft proposal. This increase, in spite of the decrease in present value of system costs, results from the reduced sales caused by increased conservation acquisitions.

TABLE 4

# Decision Factor Scores for Final and Draft 1990 Resource Programs

| | System Cost Minimization 1/ (millions 88$) | Ability to Meet Contingencies 2/ (aMW) | Financial Risk Minimization 3/ (%) | Near-Term Rate Minimization 4/ (mills/kWh 92$) | Long-Term Rate Minimization 5/ (mills/kWh 92$) | Economic Risk Minimization 6/ (# outcomes) | Environmental Impact Minimization | Deliverability Maximization |
|---|---|---|---|---|---|---|---|---|
| Draft Resource Program | 0 | +31 | 0 | +0.5 | 0 | 0 | N.Q. | N.Q. |
| Final Resource Program | −102 | +131 | −1 | +0.4 | +0.2 | 3 | N.Q. | N.Q. |

N.Q. Non-quantifiable.

1/ Increases (+) or decreases (-) in the expected present value of total system costs compared to the Draft 1990 resource program.

2/ The BPA energy surplus (+) or deficit (-) in 1997 assuming High loads. High loads are a proxy for a variety of contingencies which could create deficits.

3/ The final 1990 resource program reduces the probability of negative cash flows in 1997 (in excess of $200 million) by one percentage point compared to the Draft. These results are not statistically significant.

4/ The change in the PF rate for the 1992/93 rate period due to the proposed budget change (relative to 1990/91 program levels).

5/ The change in the average PF rate for 1998-2010 compared to the Draft, in 1992 dollars.

6/ The number of outcomes (out of 100) in which the final resource program causes an increase in total system costs of $300 million or more, compared to the Draft.

- Minimize Exposure to Economic Risk of Unplanned Changes in Load Growth, Resource Availability, and Costs. Table 4 shows that the final Resource Program involves a slightly greater risk of an increase in present value of system costs greater than $300 million. This slight increase in risk occurs because there is some chance that the increased expenditures on resources included in the final Resource Program will ultimately prove unnecessary.

- Minimize Local and Global Environmental Impacts. The final Resource Program and the Draft are ranked against this decision factor based on the premise that conservation is relatively environmentally benign compared to generating resources. The final Resource Program acquires more conservation than the Draft. However, the additional all sources competitive acquisition in the final may result in more generation resources being acquired in the final compared to the Draft. Hence, the final Resource Program and the Draft are ranked about equally. Except for the global warming analysis, which is described in the Technical Report, BPA did not conduct new environmental analysis of this Resource Program. BPA is planning to complete a Resource Programs Environmental Impact Statement (RPEIS) in 1992. The RPEIS is expected to be available for use in decisionmaking for the 1992 Resource Program.

- Maximize Resource Deliverability in View of Social/Political Factors. The rankings are based in part on the premise that conservation has earned broad acceptance in the Pacific Northwest both by consumers and BPA's wholesale customers, and that reductions in conservation reduce the "deliverability" of the alternative. A stable conservation program also is believed to be a key to that resource's deliverability. In addition, there is broad public support for a diverse package of resource actions. Program emphasis on conservation and lost-opportunity conservation minimizes institutional and political barriers in light of BPA's growing resource needs. Also, broadening generation resource options through the test of the "all sources" resource acquisition process would improve the overall future resource deliverability. The final Resource Program is ranked slightly higher than the Draft because the final program includes a larger stable conservation program that captures the lost-opportunity conservation resource. In addition, the final Resource Program includes a larger competitive resource acquisition effort and a billing credits test.

## SELECTION OF 1990 RESOURCE PROGRAM

The following are BPA's reasons, in view of the decision factors, for selecting the final 1990 Resource Program.

- Least-Cost Approach. The proposal represents the least-cost approach for meeting BPA's load obligation. The Resource Program captures all the cost-effective resources that can realistically be acquired in FY's 1992 and 1993. However, if market conditions change or the ability to acquire cost-effective conservation or generation resources becomes greater, BPA will adjust its efforts to capture additional resources.

- Budget And Rate Effects Are Within Bounds. Total capital and expense costs for the proposal, not including the large thermal budget and overheads, average $160 million/year for FY's 1992 and 1993. This is roughly a 50 percent increase over expenditures in FY 1990; considering only these expenditures, this translates into roughly a 0.4 mill/kWh increase in FY 1992 over the current average PF rate. This rough estimate of the implications of the Resource Program on PF rates does not consider other BPA expenditure needs and therefore should not be interpreted as BPA's estimate of future rates. BPA's judgment is that these expenditures and rate impacts are acceptable, in view of the load/resource outlook.

- Manages Risk Appropriately. The program includes capturing lost-opportunity and other low-cost resources that would keep BPA in load/resource balance under the 1989 medium-high forecast. In addition, it recommends low-cost actions, short of acquisitions, such as the acquisition of options on 800 aMW of short lead-time resources to prepare BPA to reliably and efficiently meet the high load growth contingency. The Resource Program imposes no increased financial risk on BPA, and minimizes the risk of large future system cost increases.

- Stable Conservation Program Securing All Cost-Effective Conservation. The cornerstone of the Resource Program is a commitment to a steady ramp-up of the conservation programs to at least 200 aMW by FY 1997. This aspect of the program is key to achieving the least-cost approach to resource development, and to making the conservation resource deliverable in the long run.

- Flexibility And Diversity. The program takes significant actions in a wide range of new resource types, without irrevocably committing BPA to major investments until the need for such investments becomes clearer. In particular, BPA will be gaining needed experience in acquiring generation resources to efficiently meet anticipated growth in Federal System loads later in the 1990's.

## OTHER RECOMMENDATIONS

In addition to recommending actions BPA should take to develop resources, the 1990 Resource Program addresses other important resource-related issues, and develops recommendations on these issues. Following are the highlights of these recommendations.

### A. WNP-1 and -3

In the Draft 1990 Resource Program BPA recommended starting a new comprehensive study of the future of WNP-1 and -3 beginning in July 1990. BPA's rationale was that many significant changes in issues surrounding the projects had occurred since the last comprehensive study in 1987. Among these changes were the reduced risk of default on outstanding bonds should the projects be terminated and the lower probability that either project would be needed to meet future load growth.

BPA received many comments on this recommendation, the majority of which suggested a new study was either premature or not needed at all. One reason given for postponing the next study was that a study in 1990 would divert regional attention from the Council's new Power Plan. BPA views this as a valid concern and considers input from the Power Plan to be important information that will complement the next study of WNP-1 and -3. Another reason given was that a study commencing in 1990 would not have the benefit of information from BPA's Puget Sound reinforcement study that currently is underway. In addition, the feasibility and cost-effectiveness of cogeneration and firming nonfirm are still uncertain and significantly affect the future of WNP-1 and -3. A clearer picture of the costs and availability of these competing resources should emerge as BPA proceeds with Billing Credits, competitive acquisitions, and implementation of the Resource Contingency Plan.

Some commenters suggested that the next study should focus on the institutional issues surrounding the projects, with less attention on economics. Reasons cited were that the economics are fairly clear--that the projects essentially provide no benefits on an expected value basis, but potentially would have high value if long-term load growth continues. The institutional issues BPA was encouraged to address are those dealing with the regional consensus on the projects, the process by which the projects would be terminated, BPA's relationship with the Supply System, and other broader policy issues. BPA agrees that any subsequent study of the projects should include a thorough evaluation of the relevant institutional issues.

BPA's final recommendation is to defer a new comprehensive study of the future of the projects until significant new information becomes available or conditions change sufficiently to warrant a new study. In the interim, there is no change in the status of WNP-1 and -3 within BPA's resource planning process. Based on current schedules for the Council's Power Plan and BPA's Puget Sound reinforcement study, it appears likely that a new study will be deferred at least until 1991.

## B. DSI Load Uncertainty Beyond 2001

The assumption for most of the Resource Program analysis was that the DSI's would continue to receive the same type of service as they receive now after their contracts expire in 2001. There is some uncertainty about whether this assumption will hold true. BPA is moving to resolve this uncertainty. Changes in type of service or rates after 2001 could change the level of DSI load served by BPA. Since this uncertainty is not yet resolved, BPA conducted analysis to determine whether the Resource Program actions would still make sense even under the extreme case that all DSI load is gone in 2002. This analysis indicated that the Resource Program remains the best choice, even under this extreme scenario. That is, the resource actions in the program remain economic compared to the alternatives tested even if all the DSI load unexpectedly leaves BPA's system.

As the year 2001 approaches and BPA is faced with larger resource decisions, DSI load uncertainty is likely to play a bigger role in the Resource Program. This issue will require careful attention in the 1992 Resource Program.

## C. Global Warming Insights

BPA received extensive public comment on its Draft Global Warming Study published in the Draft 1990 Resource Program. Many commenters applauded BPA's willingness to address the global warming issue. Some commenters, however, expressed concern about fuel switching as a global warming mitigation alternative. BPA views global warming as a serious environmental risk. As a Federal agency, BPA has a responsibility and a commitment to provide a reliable, cost-effective, environmentally sound electric power system. The 1990 Resource Program represents BPA's initial effort to examine the consequences of resource alternatives regarding emissions of greenhouse gases.

Carbon dioxide, produced by combustion of fossil fuels, is the primary greenhouse gas. BPA's analysis examined a range of alternatives designed to reduce net carbon dioxide emission on the West Coast.

The results of the analysis suggest that increases in energy efficiencies are the most economic means of reducing carbon dioxide emissions. Specifically, the analysis found that switching from electric water heaters to gas water heaters would reduce $CO_2$ emissions significantly (because combustion-generated electricity would likely be displaced) and provide economic benefits as well. Prohibitions on fossil fuel resources and building WNP-1 and -3 ahead of need do not appear to be a cost-effective means of reducing carbon dioxide emissions. Strategies for mitigating global warming will be examined further in the RPEIS.

## D. Fuel Switching

The Global Warming Analysis in the Draft 1990 Resource Program addressed the potential for switching water heating load from electricity to natural gas. Many utilities commented that fuel switching could threaten the financial health of individual utilities, and that any action in support of fuel switching should come from the local utility, not BPA.

Since the Draft, BPA has concluded that reductions in electricity consumption which result from switching water heating, space heating, or other end-use loads from electricity to natural gas or other alternative fuels do not appear to meet the Northwest Power Act's definition of a "resource." BPA also agrees that decisions on whether to try to influence end-use fuel choice should be left to the local utility. Hence, no BPA actions in support of fuel switching are included in this Resource Program.

However, the question remains whether BPA should support customers who choose, on their own initiative and using their own funds, to encourage fuel switching. Such fuel switching, when it is indeoendently undertaken by customers, has the potential to reduce BPA's obligation to acquire new resources and transmission facilities, reduce BPA costs, reduce BPA rates, and reduce West Coast $CO_2$ emissions.

Though fuel switching will not be included in the first round of billing credits, BPA support similar to a billing credit may be appropriate in certain circumstances. A mechanism similar to billing credits could be appropriate because billing credits are granted only for independently-undertaken actions which reduce BPA's obligation to acquire resources, and because BPA rates are no higher with the billing credit than without it.

BPA intends to look into authorities and mechanisms for providing such support to BPA customers who choose to pursue fuel switching. BPA will provide additional opportunities for input from customers and other interested parties before implementing any strategy for providing support to independently-undertaken fuel switching.

### E. Resource Actions in the Puget Sound Area to Mitigate Peak Load Problems

Since the bitter cold spell of February 1989, BPA and other utilities have become increasingly concerned with the ability of the power system to deliver electricity into the Puget Sound area reliably. Loads have been growing rapidly in the Puget Sound area, causing greater needs for transmission from resources on the east side of the mountains to demand centers on the west side. As a result of these increased loads, the risk of voltage instability during line or generator outages is increasing.

To deal with this complex problem, BPA and the utilities of the Puget Sound area have begun a public process with the goal of completing an EIS in 1991. This process includes public meetings as well as working meetings with representatives of the utilities in the Puget Sound area. Work teams currently are addressing issues of future demand in Puget Sound, as well as quantifying the size and costs of measures available to mitigate the problem. Four areas of potential solution are: (1) load curtailment; (2) local generation; (3) conservation and load management; and (4) additional transmission.

The final Resource Program, as already described, includes siting and licensing two combined-cycle CT's, or optioning similar resources, with a total capacity of over 800 MW. If they were built in the Puget Sound area, these units could contribute substantially to relieving the immediate peak load problem in the Puget Sound area.

The appropriate resource question for the Resource Program is whether or not efforts should be made to locate or develop resources needed for Federal System energy needs in the Puget Sound area so that they can also help alleviate the transmission capacity problem. A preliminary analysis, based on the current estimated direct cost of a cross-Cascades transmission line, indicates that a benefit of about $100/kW exists for siting resources in the Puget Sound area rather than in some other part of the region. This benefit is rather small, compared to the capital cost of most power resources (CT's, for example, cost about $600/kW) and does not provide a large incentive to locate a resource in the Puget Sound area rather than elsewhere in the region. However, since the construction costs of the CT's do not vary substantially with their geographic location, the economic advantage may be sufficient to warrant location of the CT's in the Puget Sound area.

The study of the peak load problem of the Puget Sound area is continuing in the context of work on an environmental impact statement. However, there is also a concern that winter peak loads in the Puget Sound area have grown beyond the levels that can be reliably served by the existing transmission system. To mitigate this problem, short lead-time resources and/or load management may be necessary simply because a cross-Cascades transmission line cannot be built soon enough to solve the problem. For example, BPA is now working with the Supply System to study the feasibility of using the generator at WNP-3 as a synchronous condenser that could help alleviate the Puget Sound peak load problem in the near term.

### F. Planning for Surplus

Now that BPA is in load/resource balance and is projected to remain so through the turn of the century assuming the 1989 medium load forecast, suggestions have been made that BPA plan for a small surplus as a cushion against higher-than-medium load growth or resource failure. Currently, given the range of load uncertainty, BPA plans for enough resource additions to meet projected firm loads under critical water conditions at least cost. This least-cost planning includes adding all low-cost resources that can be sold for more than they cost.

BPA examined the cost of planning for at least a 200 aMW surplus in all load conditions. The analysis shows that the present value of total system costs would increase by approximately $350 million, even after taking credit for the additional revenues received from selling the surplus. Thus, maintaining a surplus as insurance against higher-than-planned-for loads or other extreme conditions appears rather expensive.

A number of commenters continue to urge that BPA plan for a 200 aMW surplus despite this analysis of the increased costs of carrying such a surplus in all load conditions. Some additional information that should be considered in this debate is that under BPA's analysis in almost 80 percent of the 2,000 cases analyzed (100 games x 20 years) BPA has a firm surplus. This surplus averages 350 aMW. In cases where BPA fails to achieve load/resource balance, the firm deficit averages only 50 aMW. This surplus in most cases is the result of the lead time needed to bring large resources on line. If BPA planned to always have a 200 aMW surplus, in most cases the surplus would be substantially higher than 200 aMW. Instead, a more prudent "insurance policy" appears to be the Resource Contingency Plan, as described previously.

Committee: House Small Business
Witness: Sue F. Hickey
Date: September 15, 1990
Page: 57, line 1321

## INSERT FOR THE RECORD

Resource supply estimates for efficiency standards for appliances and new manufactured homes are reflected in Bonneville Power Administration's (BPA) 1990 Resource Program (copy enclosed). The 1990 Resource Program, released last July, describes the actions we will take to develop new resources to meet the future power requirements of our customers.

Residential appliance supply estimates include savings which can be realized from energy efficient refrigerators, refrigerator-freezers, and freezers. The estimates are based on commercially available units which exceed current National Appliance Efficiency Standards. Assuming medium load growth for the period of 1992 to 2010, savings available to BPA from refrigerator, refrigerator-freezer, and freezer appliance standards amount to about 46 average megawatts (aMW). This breaks down to 34 aMW for refrigerators and 12 aMW for freezers. DOE has recently adopted new, more efficient standards to be implemented in 1993 which will assure that at least a portion of this 46 aMW will be captured.

The Resource Program also identifies a savings potential for efficient water heating. To achieve this potential, actions would include installation of energy-efficient water heaters, dishwashers, clothes washers, R-11 wraps for water heaters, and low-flow showerheads. Assuming medium load growth for the same time period, these actions could result in savings of approximately 114 aMW.

The savings potential for new manufactured homes is based on implementing all cost-effective measures which are over and above current construction practices. Again, assuming medium growth from 1992 to 2010, BPA could realize savings of about 45 aMW from this resource.

It should be noted that BPA, the Northwest Power Planning Council, and others are continually developing new information which may alter these estimates. As a result of this ongoing work, resource costs and potential savings amounts may fluctuate, and new resources may be added.

BEFORE THE

HOUSE SMALL BUSINESS COMMITTEE

SUB COMMITTEE ON

REGULATION, BUSINESS OPPORTUNITIES & ENERGY

TESTIMONY OF

RONALD S. YOCKIM

Chairman Wyden and members of the Committee, thank you for this opportunity to appear before you. My name is Ron Yockim, I am here today on behalf of the Oregon Cogeneration Interest Group.

The Oregon Cogeneration Interest Group is an association of small power producers. Originally the group was started by operators of wood fired cogeneration facilities, such as Blue Mountain Forest Products, Prairie Wood Products, Biomass One, Burrill Lumber and D. R. Johnson Lumber Company. Later its membership expanded to include other small power producers including Marion County (garbage burning facility) and Douglas County (Galesville hydro facility).

The majority of these facilities were conceived in the early 1980's to resolve problems unrelated to energy generation (ie. waste disposal, water development or growth in process steam requirements). Not unexpectedly, most were operators with limited experience in the utility field. They represented the type of operator and facility that the federal government through PURPA and the State of Oregon through its "mini purpa" sought to encourage.

With the energy supply forecasts of the early 1980's these operators were viewed as "white hats", ingeniously solving their own problems while helping to resolve the looming energy deficit. This "white hat" view lasted only as long as the energy forecasts predicted a deficit. Once the concept of surplus entered the forecasts the public's perception of us changed to "black hats".

With this change in perception we faced numerous attempts by utilities, regulators, and legislators to cancel our contracts and/or shut us down. At a great and unexpected expense we were forced to defend ourselves and contracts both in public as well as in the regulatory arena. While PURPA was designed to exempt the small power producer from utility type regulation, we were forced into the utility rate-making process and eventually the courts.

Now with a new energy forecast predicting deficit, we again find ourselves perceived as "white hats". While it is encouraging to experience a new interest in small power, we are naturally very cautious.

The past political instability over small power has soured the small operator and investor from undertaking long term new projects. While one can plan and invest in the face of scientific and financial risk, it is nearly impossible to deal with the risks of an ever changing political and regulatory climate. Before small power resources can be expected to play a major role in meeting the Northwest's future energy needs there must be more stability in the regulatory arena.

We believe there are tremendous opportunities for the small energy developer to play a role as a national energy policy is developed. As we obtain an ever-clearer picture of the future demand, it is apparent that the region will need new sources sooner than was ever anticipated even as little as two years ago. Since the small power producer generally requires less lead time to bring a plant on line, their small incremental additions quickly act to resolve the immediate needs and allow time for the orderly development of the larger sources. Our experience has shown the small operator not only requires less lead time, it has removed the cost overrun risk from the ratepayer.

One of the biggest risks for the wood fired cogenerator is the rapidly changing availability of fuel. While most of our projects were designed at a time when fuel was abundant, the recent changes in the Pacific Northwest National Forest timber harvest levels have resulted in an unanticipated fuel scarcity. Currently the fuel supply for wood fired facilities is extremely tight and will get even tighter in the near future. In fact, in some areas the current generating capacity already exceeds the fuel supplies. It is not unusual to see sawdust and bark being hauled to Northern California from Eugene and Coos Bay a phenomenon totally undreamed of as little as four years ago.

The change has been so dramatic that few operators were prepared for the magnitude of fuel price escalation. While the contracts were designed with inflation forecasts, they did not contemplate increases of this magnitude. Absent relief of some form one can expect several facilities to shut down.

While we believe the opportunities for further wood fired facilities are very limited, we also believe cogeneration still offers great opportunties. These opportunities exist in oil field refineries, hospitals, and other large facilities. Likewise other forms of Biomass or garbage burning facilities also have great potential.

In developing a new energy policy it is important that the public utilities served by BPA also be part of the equation. A major impediment to small power development has been the lack of reasonable pricing for new acquisitions by the BBA customers (public utility districts, cooperatives and other municipal utilities). By hiding behind the Bonneville shield they have not addressed their true new resource acquisition costs. As a result the local utilities have resisted any new small power development within their territory. This has forced the developer to contend with the issues of wheeling and transmission access-issues which add uncertainty and uncontrolled costs to the developer.

This is not an exhaustive discussion of the role or concerns of small power in the Northwest. However, I hope it illustrates some of the concerns and abilities of the small power producer. There are still numerous opportunities for small power and we are willing to play a major role in assisting this committee as it develops a national energy policy. We still believe that we are the "white hats". We continue to meet State and Federal clean air and water requirements and recycle waste material into energy.

# Utility Perspectives on a Regional Plan

September 1990

# Utility Perspectives on a Regional Plan

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This report is a synopsis of the perspectives of the Pacific Northwest utilities and direct service industries on key features of a regional power plan. This information is being provided to the members of the Northwest Power Planning Council as part of the continued discussion between PNUCC and the Council during the development of the new Regional Power Plan.

The perspectives contained in this report build on the previous discussions that have occurred. These thoughts are additions to the work that has been completed on load forecasts and both generating resources and conservation supply curves.

# Overview of the Plan

## Regional Planning Goal

The goal of the Regional Power Plan is to assist the utilities in meeting the future regional electrical power needs. An effective Plan will enhance the orderly and coordinated development of resources in a timely manner to meet increasing regional requirements. This goal should be clearly stated as the guiding principle in the Regional Power Plan.

The backdrop for the Plan is a robust, growing Northwest economy, with the need for additional resources becoming more and more apparent. While the future remains uncertain, it is likely utilities will be providing new resources over the next decade. It is very important that the Plan be constructive and help utilities fulfill their primary responsibility of meeting power needs.

## Diversity Among Utilities

There is considerable diversity among regional utilities. For example, some utilities serve urban areas almost exclusively, while others serve rural areas predominantly. Other characteristics, such as type of customer base, physical features of the service area, and utility risk perception all contribute to this diversity and impact resource alternatives available to utilities. For example, utilities with many industrial customers would have more industrial cogeneration opportunities than a utility serving a rural farming area. Consequently, the Regional Plan should reflect that there is diversity among utilities which will affect available resource alternatives to particular utilities.

## Regional Cooperation

The Regional Plan should assume that all "win-win" transactions will be identified and implemented. These include partnerships in both generation and conservation resources. There is a high level of cooperation among regional utilities which will most certainly continue in the future.

## Priorities

The Regional Plan must recognize that the operation and development of the Northwest power system has priorities. The highest priorities are efficiently meeting new load growth and maintaining existing generation and transmission facilities.

Secondary to the power system's "basic" needs are resource confirmation and research and development activities for long-range generation acquisition; and here as well, the region's utilities must establish priorities for those resources that possess the highest likelihood of providing low-cost, reliable generation.

Adherence to these fundamental priorities will ensure that the region retains economic competitiveness.

## Resource Uncertainty

The Plan should address, at least qualitatively, the uncertainties surrounding resource development. For example, the confidence of producing an additional megawatt from a geothermal facility is much different than developing an additional megawatt from a hydroelectric facility. Also, environmental factors, such as siting requirements and mitigation measures, add a degree of uncertainty to resource development. While utility executives may differ on which alternatives have the highest level of confidence, it is generally agreed that there is tremendous uncertainty surrounding the ability to develop a new resource for the forecasted price and on the estimated schedule.

# Resource Development

## Need For Power

Regional utilities expect power needs to increase almost 3,000 MWa over the next decade. Utilities have identified and planned for almost 3,300 MWa of new resources, both conservation and generation. Changes in the need for power and availability of planned resources will determine actual resource development.

## Parallel Development

The Regional Plan should reflect the concept that many resource alternatives are developed concurrently so that utilities can be prepared for the uncertainties of the future. For example, current actions include development of conservation, small hydro, combustion turbines, cogeneration, and maintaining the site certification at Creston for future development. In addition, the costs of differing resource technologies have wide variances, leading to instances where specific projects in a "more expensive" technology may be cheaper than those thought to be less expensive. Therefore, utilities do not plan on being fully dependent upon a single resource type or limited resource set. This approach provides flexibility to meet unforeseen load growth and protects against the inability to develop planned resources and the possibility of decreased resource performance.

## Focus on the Next Decade

The Regional Plan should use 20 years as a planning horizon in order to evaluate long lead-time resources. However, the Plan should focus primarily on the next 10 years for resource development because the planning uncertainty beyond 10 years is considerable and certain actions need to be taken now in order to meet the power needs of the 1990s.

## Resource Categories

The Regional Plan should identify two broad categories of resources as candidates for development in the 1990s. These two categories are "Planned" and "Contingency" Resources.

## Planned Resources

Planned resources are those projects, measures, and transactions that Northwest utilities are relying upon to meet projected energy needs (based on expected load growth) in the 1990s. These resources, as shown on page 7, include the following:

### Conservation

The region's public and private utilities are designating conservation as their "base" resource for future acquisition. The utilities plan to acquire about 910 MWa during the 1990-2000 period. Conservation acquisition represents the largest, single resource development effort for both public and private utilities.

### System Efficiencies

Transmission and distribution system upgrades, generating plant improvements, and system operation refinements should result in 590 MWa of energy savings.

### Renewables

Geothermal, biomass, and waste-to-energy facilities are planned to supply 70 MWa of energy.

### Hydro

Improvements to the efficiency of existing federal hydroelectric facilities and completion of those hydro projects currently in the licensing process will provide 320 MWa of energy.

### Cogeneration

650 MWa of cogeneration resources have been identified and are expected to be developed at existing facilities. The majority of these resources will be associated with the pulp and paper and refinery industries.

### Combustion Turbines

A single combustion turbine, providing 30 MWa of energy, has been planned.

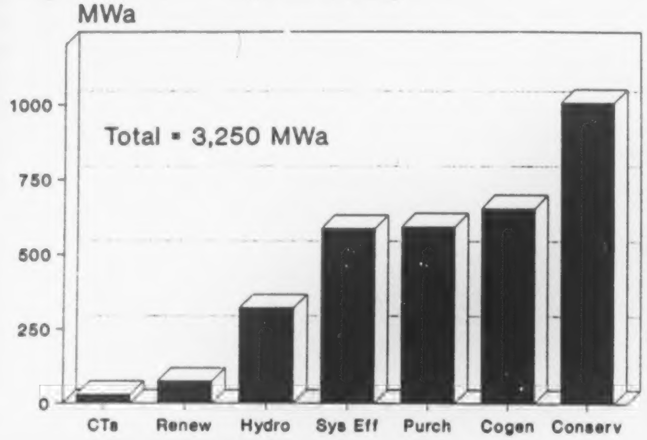
### Purchases

Utility planners anticipate that over 500 MWa of firm power purchases will be integrated into their resource development programs. Within the WSCC area, the availability of purchases in the long term will be secured because of load/resource diversities among utilities and increased transmission interconnections.

**The figure below shows, by resource type, almost 3,300 MWa of planned development. This information is derived from various regional utility planning documents such as least-cost plans, and represents a composite of planned resources for the 1990s. Utility plans emphasize a diverse resource mix and a heavy reliance on conservation acquisition in order to meet additional power needs in the 1990s.**

**Regional Planned Resources**

**(Year 2001)**



## Contingency Resources

Contingency resources are those projects, measures, and transactions that would be employed to meet power needs in the 1990s if an unanticipated event or set of events were to occur. For example, higher than projected load growth, loss of a major resource, or failure to develop a planned resource may force the region into an unexpected and very costly resource acquisition situation in order to avoid load curtailments.

Contingency resources include those projects and facilities that are in various stages of development. WNP 1 & 3, Creston, and, if authorized, Bonneville's combustion turbines are considered contingency resources.

Also included in contingency resources are unidentified power purchases, cogeneration resources, and unconfirmed geothermal resources.

## Planning Scenarios

The Regional Plan should include a description of "scenarios" that the Northwest power system may confront during the next decade. Explicit scenarios should be used to demonstrate a robust Plan--one that can identify reliable and cost-effective resources given changing circumstances, one that responds to diverse supply and demand conditions without prompting a major revision.

Additional resource stack analyses are not required to examine various scenarios because a scenario approach would largely depict supply and demand "events" in a cohesive, narrative manner. Scenarios reviewed within the Regional Plan should be consistent with the range of possible contingencies being explored by utility resource planners.

Examples of planning scenarios include:

- economic "boom"/"bust"
- loss of FELCC
- oil/natural gas price shock
- carbon tax

## Transmission

Adequate transmission facilities are an essential element for the development of generating resources. Insufficient transmission facilities, or the inability to site needed transmission facilities, can preclude an otherwise cost-effective generating resource from being developed. Therefore, the Regional Plan should acknowledge the necessity of adequate transmission facilities for generating resource developments.

# Environmental Consequences

## Current Treatment

Current regional planning efforts already consider environmental effects. These considerations should be highlighted within the new Regional Plan. For example:

- the designation of conservation as a priority resource, including the 10 percent advantage for resource cost comparisons
- stringent hydropower review requirements for sites located in "protected areas"
- the preference for small, clean-coal technologies

The Regional Plan should further highlight that utility and BPA resource plans incorporate environmental cost accounting for new resource development. The key criteria include:

- the inclusion of environmental mitigation costs (e.g., SOx and NOx control mechanisms)
- resource siting proposals that minimize externality costs
- compliance with the National (state) Environmental Policy Act, state energy facility siting council requirements, and other state and federal regulations
- compliance with public utility commission orders regarding environmental cost accounting
- employment of methodologies to quantify externality costs imposed by site-specific resource development

## Generic Resource Treatment

Numerical treatment of external environmental costs is best pursued by utilities when examining well-defined, site-specific resources. State-of-the-art methodologies to assess externality costs are principally designed for individual utility resource plans and are not directed toward generic resources identified within a regional plan. Typically, attempts to quantify externality costs for generic resources lead to highly subjective ranking schemes, or force analysts to adopt broad value ranges, diminishing the quality of the assessment.

# Regulatory Issues

## Planning vs. Siting

The Regional Plan should include actions to reconcile the "reactive" role of state siting agencies and the "prospective" nature of regional power planning. Primary actions should include:

- Informing regional siting/permitting/licensing agencies about projected resource development activities (e.g., additional cogeneration and small hydropower development, geothermal confirmation).
- Coordinating a review of existing siting/permitting/licensing standards in order to insure the applicability, regional consistency, and workability of the standards; also, supporting the development of new standards, where appropriate.

## Project Development

The Regional Plan should contain specific actions to promote planned resources with regional siting, permitting, and licensing agencies in order to streamline project development.

## Financial Incentives

For investor-owned utilities, the Regional Plan should promote regulatory changes that will bring "market forces" to bear in acquiring new resources--such as conservation, cogeneration, and power purchases. The utilities should gain regional support from the Plan before regulatory bodies, to encourage the use of financial incentives.

# Power Markets

Energy purchase opportunities have been identified by regional utilities and Bonneville and are incorporated into several utility least-cost plans. The Regional Plan should recognize these opportunities and the attendant transmission issues.

## Transactions

Utilities will seek to secure firm/option power sales contracts and power exchanges throughout the WSCC.

## Transmission

Utilities will need to upgrade and build new transmission lines in order to open further west coast power markets. Also, utilities will seek additional regional cooperation to access power markets. The Regional Plan should recognize the importance of these needs, as the Pacific Northwest utilities seek to expand access to Canadian, Intermountain, and Inland Southwest power markets.

# Nonfirm Strategies

## Current Uses

The Regional Plan should acknowledge that nonfirm hydropower is currently being used to serve the top quartile DSI load, supply power during maintenance and forced outages, and displace both high and low cost existing thermal plants. "Firming nonfirm" (i.e., displacing thermal generation with available nonfirm hydropower) is a common utility practice. The most readily displaced types of thermal generation are regional combustion turbines. There are currently 1,467 MW (capacity) of combustion turbines in the region. The utilities that own and operate these resources regularly purchase available nonfirm hydropower in order to save the fuel and operating costs of their combustion turbines.

## Flexibility

The ability to "firm" nonfirm hydropower with short lead-time generating resources (i.e., combustion turbines) has been identified as a cost-effective means of meeting future load growth. However, implementation of "firming" measures could reduce the ability of the region to respond to contingencies such as a rapid increase in load, loss of a major resource, or sudden reduction in firm hydropower due to other requirements. Because of the need to maintain flexibility, the Regional Plan should include no more than 1,000 MWa of firming nonfirm resources for the next 10 years. These resources should be included as contingency resources.

## Gas Supply/Price/Availability

"Firming" using natural gas-fired combustion turbines (CTs) raises serious questions about the deliverability, supply, and long-term price stability. The economics of this mechanism for "firming" are therefore uncertain.

Factors that impact the price, supply, and availability of natural gas include worldwide events, regional pipeline capacity, regional gas usage and delivery patterns, Canadian pipeline capacity, and increasing Canadian uses of domestic natural gas.

The Regional Plan should acknowledge the uncertainty associated with expanded electrical generation using natural gas as a fuel and include actions for reducing this uncertainty.

Some recommended actions are the following:

- evaluate "CT park" scenario using a dedicated natural gas pipeline
- investigate Canadian gas supply system and projected usages
- assess cost implications of purchasing natural gas reserves

Regional utilities are attempting to address some of these issues. In particular, PNUCC will be evaluating the ability of the region's natural gas system to deliver the required quantity of natural gas for "firming" with CTs. The conclusions of this evaluation should be included in the Plan.

## Other Approaches

Nonfirm hydropower could also be "firmed" via power purchase arrangements, pumped storage, load management techniques, and peak exchanges. These mechanisms should be included for evaluation in the Regional Plan.

# WNP 1 & 3

## WPPSS and BPA Review

The WPPSS and BPA are jointly reviewing key issues surrounding the WNP 1 & 3 option. There is consensus that no further project economic studies are warranted at the present time.

## Restart Viability

The primary concern for utilities is whether project restart is perceived as a politically viable alternative for the region. Regional discussion and efforts to reduce this uncertainty need to continue.

There are preconstruction activities with degrees of uncertainty that should be reviewed by the region to answer additional questions about project restart. These may include development of shorter schedules, environmental impact evaluations, and addressing the threat of possible lawsuits and institutional issues. BPA and the Supply System should take actions to identify and resolve the more significant issues, to better firm up the lead times for preconstruction activities should a "restart" decision be made.

While these restart and preconstruction uncertainties are being pursued, BPA and the Supply System should continue to preserve the projects, and the Regional Plan should identify them as options under review for regional acquisition.

# Optioning

The common understanding of a resource "option" is that all necessary siting and licensing activities, including feasibility studies, preliminary engineering, and environmental work, would be completed for a proposed project. That is, all permits, licenses, and site certifications required for the construction and operation of the proposed project would be issued. According to this definition, the proposed project could be "held" in that state for some time period until construction was warranted. However, no "workable" mechanism for optioning currently exists despite the dependence on optioning in previous Regional Plans. The new Regional Plan should acknowledge that there are significant contractual, legal, regulatory, and institutional issues that need resolution prior to usage of "optioning" as a viable resource planning feature.

## Unresolved Issues

The Plan should include actions to resolve issues associated with optioning such as:

- agreements with state siting agencies and federal regulatory authorities to "hold" applicable permits, site certifications, licenses, etc. for reasonable time periods prior to project construction
- discussions with utility commissions, state legislatures, etc. leading to mechanisms for favorable rate treatment of "option" costs
- establishment of principles with key participants in the project development team (e.g., design firms, underwriters/financiers, equipment vendors) to maintain a

required level of "readiness" such that project development could be initiated at any time during the "option" period

- development of principles for the allocation and payment of option-related costs among project participants

## Resource Focus

Actions to resolve contractual, legal, regulatory, and institutional issues regarding "options" should center on capital-intensive resources with long development times (e.g., hydro, coal-fired power plants, nuclear plants) .

## Regional Support

The Regional Plan should support the maintenance of permits, licenses, and site certifications for planned and contingency resources. In particular, the Regional Plan should stress the importance and value of maintaining the site certification agreement for the proposed Creston generating station. Due to this certification, the region can rely on a large generation facility as a "contingency resource." This proposed project could be brought "on line" in about six years in the event of a "contingency" situation.

# Resource Confirmation

Resource confirmation activities should focus on those resources that have a high probability of development and promising economics. Based on analyses done by Bonneville and the Council, wind and geothermal resources are projected to be available in large quantities at estimated costs comparable to more conventional resources. Therefore, these resources should be the focus of confirmation activities. (It should be noted that key recommendations from the Council's Research, Development, and Demonstration Advisory Committee for wind and geothermal confirmation programs are consistent with utility positions.) Other renewable resources, such as solar and ocean energy, warrant only monitoring and, possibly data collection efforts at this time. Also, an ongoing activity to evaluate advancements in emerging technologies, both renewable and conventional, is required.

## Geothermal

The proposed Bonneville/Utility Geothermal Pilot Project is a good approach to confirmation of regional geothermal resource potential and should be included in the Regional Plan. This proposed program is based on "partnerships" between Bonneville and the region's utilities and relies upon "output" contracts, rather than the more risky "capability" contract approach. PNUCC will solicit interest among regional utilities for participation with Bonneville in this proposed program.

## Wind

Resolution of siting, transmission interconnection, and equipment uncertainties at the Blackfeet area in Montana is critical for future, large-scale wind resource development. The Blackfeet area is estimated to have the majority of the wind resource potential in the region. However, the area is a remote, relatively pristine site with minimal transmission support. These factors introduce a high degree of uncertainty to the development of wind resources in the Blackfeet area. PNUCC has prepared a program that will evaluate the siting, transmission interconnection, and resource integration issues and if required, the wind turbine equipment performance. This program will be initiated in the fall of 1990 and should be incorporated into the Regional Plan.

### PNUCC Wind Confirmation Program

The objective of the PNUCC wind confirmation program is to determine if the sizeable wind resource potential in the Blackfeet area could be both developed and integrated cost effectively into the Pacific Northwest power grid.

The initial activity of the program will be to determine the transmission interconnection and resource integration requirements and feasibility of siting wind turbines and transmission facilities. If warranted, follow-on actions would be undertaken to evaluate the structural and mechanical performance of wind turbines in the Blackfeet area.

## Emerging Technologies

Emerging technologies for both renewable and conventional resources have the potential to alter the resource development plans for the region. For example, recent advancements in coal gasification technology could result in cheaper, less polluting coal-fired power plants. Also, refinements in wind turbine generators could allow for increased electricity generation and reduced costs. In order to evaluate possible applications of these technologies, PNUCC will prepare information regarding emerging technologies. This information will address both renewable and conventional technologies and will be tailored for utility usage. This program should be incorporated into the Regional Plan.

## Private Sector Involvement

It may be possible to enlist technical support, equipment, and even financial participation from the private sector for resource confirmation activities. The Regional Plan should include actions to solicit this private sector involvement.

# Roles for the Northwest Power Planning Council

## Endorse Utility Resource Development

Endorsement and advocacy of utility resource development plans by the Council members would greatly aid new development actions and ensure that load growth will be efficiently met.

## Inform and Educate Public

With new resource development imminent, the public will need to be better informed about the extent and type of new resource development being planned.

## Encourage Regulatory Participation

The Council members should work with state and federal officials to streamline project siting, licensing, and certification processes. Additionally, the Council members should encourage regulatory support for various mechanisms, including "market" incentives, that will foster new resource development and implementation of the Plan.

## Promote Private Sector Involvement

The Council should strive to enlist the financial and technical support of resource developers to complement regional resource confirmation activities.